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CONTENTS

LIST OF ABBREVIATIONS

AIB	Allied Irish Bank
BSF	Building Schools for the Future
CCMS	Council for Catholic Maintained Schools
COFOG	Classifications of the Functions of Government
DBFO	Design Build Finance Operate
DENI	Department of Education Northern Ireland
EIB	European Investment Bank
GDP	Gross Domestic Product
GILTS	Bonds issued by the British Government
HAZOP	Hazard and Operability Study
HMRC	HM Revenue and Customs
HRA	Housing Revenue Account
IFRS	International Financial Reporting Standard
IMF	International Monetary Fund
IRR	Internal Rate of Return
ISNI	Investment Strategy Northern Ireland
LIBOR	London Inter-Bank Offer Rate
NAO	National Audit Office
NHS	National Health Service
OECD	Organisation for Economic Co-operation and Development
OGC	Office of Government Commerce
PFI	Private Finance Initiative
PPP	Public Private Partnership
PwC	PricewaterhouseCoopers
RPI	Retail Price Index
SCCCJ	Scottish Consortium on Crime and Criminal Justice
SIB	Strategic Investment Board
SNP	Scottish National Party
SoPC	Standardisation of PFI Contracts
SPS	Scottish Prison Service
SPSS	Statistical Package for the Social Sciences
SPV	Special Purpose Vehicle
TUPE	Transfer of Undertakings (Protection of Employment) Regulations
VFM	Value for Money

FOREWORD

Public private partnerships (PPP) are used extensively in the provision of public services. Who actually bears the risk in such schemes? This new research report looks at PPP schemes from a new and different viewpoint by examining financiers' perceptions of risks and then comparing them to the perceptions of their public sector partners.

The project involved three strands of research: a review of the existing literature; a survey of providers of equity, senior debt and bond finance including follow up interviews; and six mini case studies to examine perceptions of risk in the public sector.

The study investigates how financiers perceive the risks associated with PPP; how financiers manage these risks; how changes in the PPP industry, including the impact of the credit crunch, have affected financiers' perceptions of risks; and how financiers' perceptions of risks differ from those of their public sector partners.

The report explains the complex network used in PPP schemes, one which may not be understood by the general public and those who are not involved in PPP, and therefore contributes to an understanding of how PPP operates in practice. It raises questions about the dispersion of risk both within the public sector and multiple organisations within the private sector and how these risks are managed. A clear understanding of these issues, especially the balance between risk transfer and costs, is essential to inform future policy development.

The intention with PPP is that risks should be held by the party best able to manage them, and that the transfer of risk is priced into any PPP contract, yet one of the key findings of this research is that it is possible to transfer risk back to the public sector after contracts have been settled. The impact of this on value for money to the public sector and ultimately taxpayers needs to be assessed.

The authors identify six recommendations for policy makers to consider. These include considering how bid costs could be reduced as they act as a barrier to entry and therefore limit the choice of bidders and the need to compare expected versus actual risk transfer. The authors conclude by identifying six areas for future PPP research.

This project was funded by the Scottish Accountancy Trust for Education and Research (SATER) (for further details see page 169). The Research Committee of The Institute of Chartered Accountants of Scotland (ICAS) has also been happy to support this project. The Committee recognises that the views expressed do not necessarily represent those of ICAS itself, but hopes that the project will add to existing knowledge on how PPP operates in practice and assist in future policy development.

David Spence
Convener, Research Committee

September 2010

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Executive Summary

Introduction

Public private partnerships (PPP) are an established model for governments internationally to provide infrastructure-based services. They involve a clearly defined project financed by the private sector, which shares the associated risks and rewards with the public sector. Typically the public sector procurer will sign a contract with a special purpose vehicle (SPV) which subcontracts the finance, design, construction, maintenance and soft services to companies that are often related to its shareholders. This study focuses mainly on the financiers in this network of organisations, and examines their perceptions of the risks involved in the investment of equity and senior debt in PPP.

Private sector involvement in the provision of public services is not new but the PPP model enables and encourages more private sector involvement in the provision of public services. The scale of projects involving private finance is significant and PPP is used widely across the public sector. While a number of advanced Organisation for Economic Co-operation and Development (OECD) countries now have well-established PPP programmes, the best developed is the UK's (IMF, 2004). Since the inception of the policy in the 1990s, the total capital value of signed deals in the UK reached some £63 billion by the end of 2008. PPP spending currently represents some 10% of total government investment. Although the new coalition government is expected to significantly curtail investment in infrastructure projects, it is likely that it will favour private sector involvement in any such future projects. Despite the rapid growth in the market, very little research has investigated the role of the financiers in PPP, although a growing body of research examines the projects from the perspectives of the public sector procurers and the private sector contractors. The contribution of this study is its focus on the role of financiers.

Research objectives and approach

Risks and risk transfer are at the heart of PPP, and the intention is that risks should be held by the party best able to manage them (HM Treasury, 2003). The implication is that some risks will be contractually allocated to the private sector, although others may be retained by the public sector or may be shared. Where risks are to be allocated to the private sector, they must be identified and assessed in order to be priced into contracts before financial close, that is, the point when the contract between the public authority and the SPV is signed. The objective of this research is to explore the financiers' perceptions of risks in PPP both before and after financial close.

The research strategy was three-fold. Firstly, a literature review identified key themes, from which a questionnaire survey was designed. Secondly, a database of financiers was created and the survey was administered to 109 providers of equity, senior debt and bond finance, from which 43 usable responses were received, and follow-up interviews were carried out with eight respondents. Thirdly, six PPP projects were selected as mini case studies to examine perceptions of risks in the public sector. Semi-structured interviews were conducted in five sectors – roads, hospitals, schools, prisons and social housing – since risks may differ between sectors.

Research questions and findings

The research posed four questions and the following summary shows the major findings for each question in turn.

Research question 1: How do financiers perceive the risks associated with PPP projects?

Respondents perceive that a wide range of factors are important when assessing risks but the importance of risks varies at different stages of the PPP. In summary, financiers perceive that:

- Risk transfer from the public to the private sector is carried out within the framework of standard contracts, even though literature shows that these may not offer an optimal allocation of risk.
- Risk transfer to the private sector has increased over the last four years.
- Sectors with high rates of current or potential future change and hard to predict uncertainties are especially risky.
- About one quarter of respondents perceive it is possible to transfer risks back to the public sector after the project is negotiated or that risk transfer may not be agreed until after the contract is awarded.
- In terms of overall ranking, design and development was ranked as the highest risk in the pre-financial close and construction phases of PPPs. Finance risk was ranked as the second highest risk in both these phases and in the operations phase.
- A significant risk is perceived to be contractor failure during the construction phase. Perceptions about this risk in particular drive the demand for contract supports, and the importance attributed to negotiations around step-in rights.
- After construction, one quarter of respondents perceive that PPP is very low risk.

The financiers' perceptions reported here contradict previous findings that risk allocation between PPP partners may be unclear, and that the way in which risk profiles change over project lifetimes is not well understood (Ng and Loosemoore, 2007).

Research question 2: How do financiers manage the risks associated with PPP projects?

Risks are managed in a number of different ways, which may be summarised as follows:

- Risks may be avoided by selecting familiar project types and partners and refusing projects with uncertainties, such as refurbishments, or with high reputational implications, such as prisons.
- Risks are passed through the PPP organisational structure to subcontractors.
- Financial and performance contract supports ensure risk does not revert to financiers.
- Direct agreements and step-in rights empower senior debt holders.
- Purchase of insurance cover and hedges.
- Modelling to achieve investment grade rating.
- Third party advice.
- Project monitoring.

This combination of methods results in multiple entities holding elements of PPP risk.

PPPs normally adopt a heavily geared financial structure to minimise the return required by equity, with the consequence that the thinly capitalised SPV has limited risk carrying capability. The high levels of gearing represent a risk to senior debt, and have two implications for risk management. Firstly, risks are passed through the PPP organisational structure to the subcontractors. In order to ensure that risks do not revert to financiers, they require financial and performance supports to be provided by the subcontractors, ultimately increasing the unitary charge.

Secondly, the legal structure of the PPP involves a direct agreement between the senior debt holders and the procurer, empowering senior debt holders to step-in to the contract in the event of poor contractor performance or contractor failure. The existence of this agreement may introduce delay and cost, or limit flexibility, if contract amendments are required.

Financiers, and indeed procurers, purchase advice from legal, technical, insurance and sometimes financial and professional indemnity specialists,

so that a huge advice industry has grown up around PPP. Although most financiers do not believe that seeking advice transfers risk to their advisors, the procurers appear to rely heavily on such advice.

Research question 3: How have changes in the PPP industry affected financiers' perceptions of risks?

Prior to the credit crunch, industry changes were those associated with a maturing industry. Early memories provided by interviewees suggest high levels of uncertainty about the risks and the risk-return relationship inherent in PPP. As the industry matured, debt products became commodified, the size of primary investment funds increased, and importantly a secondary market developed enabling exit. Early exit is intended by about 20% of respondents and only two thirds report their intention to stay with a PPP till contract end.

During the credit crunch, the following changes in the industry are essentially imposed by a lack of capacity in the senior debt and bond markets:

- Equity investors perceive that there is much less senior debt funding available, and that banks are less willing to provide finance for the full lifetime of the PPP.
- Refinancing has changed from being an attractive opportunity to becoming a downside risk for deals written during the credit crunch; deals that may need to be refinanced between 7 and 10 years into the project. This is essentially a risk for equity investors, but could have implications for the public sector.
- The banks' margin has increased and there is pressure to increase the proportion of equity to debt. Perceptions about the required level of equity vary from 15% to 30%, compared to the previous level that was typically 10%. The required rate of return by equity investors is perceived to be rising. To the extent that these perceptions are accurate, it is possible that if international capital markets stabilise, there will be renewed interest in refinancing as the market regains competitive pressures.

- Whereas the senior debt market is perceived to be in crisis, this is not the case with the primary equity market. However, the secondary equity market is perceived to be less buoyant than before the credit crunch took effect.

Research question 4: How do the financiers' perceptions of risks differ from those of their public sector partners?

Williams *et al.* (2003) and Abednego and Ogunlana (2006) argue that risks affect behaviour when their consequences are personally relevant and when they materialise. The findings of this study confirm those tendencies. Private sector respondents are focused on risks that they are contractually allocated and need to transfer, whereas public sector interviewees are focused on the risks that they retain. In summary:

- In four of the five sectors – the exception is roads – the public sector interviewees are concerned about the financial consequences of holding demand risk, which can result in making unitary payments for unwanted facilities.
- The nature of political risks associated with PPP projects varies across the sectors but the procurers' concern focuses on the impacts on service users.
- User specificity of infrastructure is a risk factor for financiers (Rodney and Gallimore, 2002), as are uncertain lifecycle costs. But potential building obsolescence most concerns the procurers.
- Conflicting needs, to reduce cost drivers on the part of financiers and to increase flexibility in building use to meet changing operational requirements on the part of the procurers, create trade-offs between flexibility in and affordability of contracts.
- Procurer driven changes to contract specifications during negotiations are perceived as undesirable and disproportionately costly by the financiers. In particular, the need to obtain agreement from senior debt holders causes delay and adds costs.

- Whereas the financiers and designers appear content to insure against claims arising from incidents such as accidents, there is some evidence that contracting equity investors and the public sector are more concerned that incidents should be avoided because of the impact on service users and employees.

Recommendations for policy makers

The recommendations arising from the research are as follows:

- A macro-level review of the PPP policy should be undertaken. There is an understanding amongst the financiers that PPP has gone through an early stage of learning in which some lessons have been learned. At a macro level our recommendation is now that an extensive review of the PPP policy should be conducted to compliment the reviews of individual projects that have been undertaken by the NAO in particular.
- A macro-level review should focus on the accuracy of risk pricing and the practice of risk transfer.
- A macro-level review should also consider how government can reduce the costs of mitigating its exposure to risks, such as inflation and interest rate movements.
- Public and private sector partners need to consider how high bidding costs can be reduced to encourage new entrants to the PPP market and more bidders for individual projects. This research shows that high bidding costs lead bidders to select carefully the projects they will bid for and to work with known and trusted partners, potentially creating barriers to entry.
- Procurers should keep under review their policies on the use of third party advice and its value for money. This research shows considerable reliance is placed upon third party advice, especially in the public sector.

- Greater transparency of contract details is needed to enable scrutiny of PPP both at policy and individual project level. The findings of this study lead us to repeat the many calls already made for greater transparency, and in particular to repeat the Shaoul *et al.* (2008) argument that all public authorities should routinely publish their business cases after financial close, and that there should be an agreed time period after financial close beyond which commercial confidentiality should not be used as a rationale for non-disclosure.

Conclusions

A complex network of organisations surrounds the two main partners to a PPP contract – the procurer and the SPV. Within this network, risk passes from the SPV by means of legal contracts to subcontractors, who are responsible for construction and operations. Risks may be allocated to parties who cannot control them or do not wish to hold them, in which case they will be mitigated by various means, including hedges and swaps and frequently insurance. Such risks are thus dispersed around the private sector, beyond the immediate PPP network.

Senior debt holders have a powerful position within this network. Subcontractors must provide financial and performance supports, which are contractual arrangements designed essentially to protect the interests of senior debt providers against poor subcontractor performance or contractor failure. Crucially, debt servicing costs are covered by these supports during any time over-runs on the target completion dates for a project. This important protection for the senior debt holders enhances the project's credit rating.

This research report contributes to an understanding of how PPP operates in practice. It shows that while the private sector is often described in relation to PPP as if it were a single entity, in practice, risks transferred from the public sector are dispersed amongst multiple organisations both within an immediate PPP network and beyond. This dispersion of risks adds cost, raising questions about value for money for the procurer.

1 Introduction

Public private partnerships (PPP) are an established model for governments internationally to provide infrastructure-based services. Both macro and micro-economic justifications support their use. Proponents credit them with providing much needed investment that is otherwise difficult to fund and, as is often emphasised in the UK, with introducing more efficient private sector management techniques to the bureaucratic public sector, thereby improving the cost to quality relationship of service provision.

PPPs involve a clearly defined project financed by the private sector, which shares the associated risks and rewards with the public sector. While PPPs may take a variety of forms, this study is concerned with the time and cost specific (English, 2007) long-term contractual arrangements under the Private Finance Initiative (PFI). However, throughout this report the term PPP is used, since this terminology is much more widely recognised internationally. In these projects the private sector designs, builds, finances and operates assets such as roads, hospitals, schools, prisons and social housing, in return for a revenue stream that is used to repay debt, fund construction and operations, and provide a return to investors (Pollock and Price, 2004). This revenue stream takes the form of an annual unitary charge paid by the procurer.

Typically the procurer will sign a contract with a special purpose vehicle (SPV) which is usually formed specifically to undertake the project. The SPV is typically owned by a consortium which, because of the holistic nature of the contracts, will normally include two or three companies with the range of skills necessary to finance, build and operate the required facilities. The SPV, which is usually a shell company, in turn sub-contracts the finance, design, construction, maintenance and soft services to companies that are often related to its shareholders.

This study focuses mainly on the financiers in this network of organisations, and examines their perceptions of the risks involved in the investment of senior debt and equity in PPP. This first introductory chapter:

- Describes the background to the study.
- Outlines the research approach.
- Sets out the structure of the report.

Background to the study

Essentially, PPP is a form of project finance in which traditionally the project assets alone provide collateral for a non-recourse loan, repayments on which are covered only by the cash flows from the project. According to *Project Finance*, the project finance industry's trade journal, during 2008 the global project finance market size increased by 13% to $315bn compared to $278 billion in 2007. However, the fourth quarter of 2008 with deals valued at $55bn actually saw a drop of 22% on the same period in the previous year, and the decline continued in 2009, when there was a 31% reduction for the first nine months compared to the same period in 2008 (Project Finance, 2008 and 2009b).

Although such involvement is not new, the PPP format enables and encourages more private sector involvement in the provision of public services than previously. For example, the private sector has built and managed toll roads internationally for many years. But PPPs have two distinguishing features from earlier forms of private sector participation. Firstly, project risks, which are contractually allocated and may rest with the public or private partners or may be shared, are intended to be held by the party best able to manage them (HM Treasury, 2003). Where risks are to be allocated to the private sector they must be identified and assessed, in order to be priced into contracts before financial close. The criterion of a project's suitability for financing is whether it is able to stand alone as a distinct legal and economic entity with project assets, contracts and cash flows that are separate from those of the sponsors (Akbiyikli *et al.*, 2006).

Secondly, the scale of private finance is unprecedented. Globally, the PPP market increased for the second consecutive year reaching a record high of $68.6 billion in 2007 compared with $49.2 billion in 2006 and $40.7 billion in 2005 (Project Finance, 2008). In the first half of 2008 the PPP

volume reached its highest ever half yearly volume of $37.2bn compared with $32bn and $30.6bn in the first halves of 2007 and 2006 respectively (Project Finance, 2009a). Although PPP financing continued to be strong throughout 2008, by 2009 the impact of the credit crunch began to take effect. The first half of 2009 saw a decline of some 30% on 2008, although the trend may have begun to reverse as the first nine months of 2009 saw a decline of 26% on the comparable period in 2008 (Project Finance, 2009b).

While funding takes a number of forms, senior debt is an important source of finance since deals are heavily geared. Globally, in 2009 the proportion of project finance volume financed by debt was 79% compared to 75% in 2008 (Project Finance, 2009b). Table 1.1 shows the top 10 global providers of senior debt in 2008. Dexia recovered its number one ranking, which it lost to the Korea Development Bank in 2007. Of the top ten in 2007 only five – Dexia, Korea Development, HBOS, RBS and UniCredit – retain that status in 2008.

Table 1.1 Global PPP project finance loans 2008

Mandated lead arranger	Value $m	No. of deals
Dexia	3,124	29
Korea Development Bank	2,298	15
DePfa Bank	1,857	15
State Bank of India	1,857	7
HBOS	1,845	8
Royal Bank of Scotland (RBS)	1,815	18
Santander	1,601	14
BBVA	1,570	14
Fortis	1,416	12
UniCredit Group	1,272	7

Source: Project Finance, 2009a.

In 2007 transactions closed at an all-time high of 196 deals, compared to 159 deals in 2006 and 138 deals in 2005. Infrastructure projects dominate with values of $64.2 billion (£40.6 billion), representing 93.5% of the total.

The remainder is energy projects. The urban railway, airport and water/sewage sub-sectors recorded the highest percentage growth rates at 1,927%, 558% and 422%, respectively, whereas defence dropped 86% from the previous year. Although the Indian subcontinent saw the highest levels of growth in 2007, Western Europe dominated the PPP market closing 109 of the 196 projects valued at $34.1 billion (£21.5 billion), despite a 7% reduction from the previous year (Project Finance, 2008).

The UK is recognised as a global leader in the use of PPP, and it was the biggest player in Western Europe in 2007 with 69 signed deals worth $16.3 billion (£10.3 billion), although this represented a $1.3 billion decrease from 2006 (Project Finance, 2008). In the first half of 2008 the UK continued to lead Western Europe with 23 deals at $8.1bn, an increase of 5%. Since the inception of the policy in the 1990s, the total capital value of signed deals in the UK had reached some £63 billion by the end of 2008. Under the Labour government, PPP spending represented some 10% of total government investment, and while the new coalition government is expected to significantly curtail investment in infrastructure projects, it is likely that it will favour private sector involvement in any such future projects. In the UK, equity typically represents about 10% of projects' total finance. Equity investors may be project sponsors or third party investors, investing via an equity fund. To match the global demand for PPP finance, the Treasury noted in 2008 that:

> *A substantial worldwide pool of capital has become available for investment in infrastructure through specialist managed infrastructure funds. It is estimated that globally, dedicated infrastructure funds have some $130 billion under management and that 77 percent of this was raised in 2006 and 2007.* (HM Treasury http://www.hm-treasury.gov.uk/d/bud08_procurement_533.pdf. accessed 20th April 2009)

When the first PPP projects were signed it was uncertain whether investors would be able to exit these investments, but more recently a reasonably assured market has developed enabling sales of shares to both

existing investors and secondary market specialist equity funds (PwC, 2008). By 2005 over £700m of equity stakes had been traded (DLA Piper, 2006).

Despite the rapid growth in the market since the inception of the PPP policy in the mid 1990s, very little research has investigated the role of the financiers in PPP, although a growing body of research examines the projects from the perspectives of the public sector procurers and the private sector contractors. The contribution of this study is its focus on the role of financiers.

Research questions and approach

The objective of this research is to explore the financiers' perceptions of risks. The research poses four questions relating to these key players:

- Research question 1: How do financiers perceive the risks associated with PPP projects?
- Research question 2: How do financiers manage the risks associated with PPP projects?
- Research question 3: How have changes in the PPP industry affected financiers' perceptions of risks?
- Research question 4: How do the financiers' perceptions of risks differ from those of their public sector partners?

The nature of these questions led to the use of a combination of research methods in order to gain both the breadth of responses that a questionnaire offers and the depth of understanding that is possible from interviews and mini-case studies. Financiers' perceptions of risk were ascertained through a questionnaire survey and semi-structured interviews. Six projects were selected as mini case studies in order to examine perceptions of risks in the public sector. These cases were chosen to cover five sectors – roads, hospitals, schools, prisons and social housing – since risks may differ between sectors.

Literature was reviewed to guide the design of the survey instrument and the framework for the interviews. Interviews were coded into Nvivo,

a qualitative data analysis computer software package used by researchers to aid investigation into data requiring deep analysis. The questionnaire responses were analysed using the Statistical Package for the Social Sciences (SPSS) one of the most popular computer programs used for the statistical analysis of quantitative data.

Structure of the report

The report is organised in seven further chapters. Chapter two provides background information about expenditure across government departments in the UK, explains expectations about the role that private finance might have in the provision of public infrastructure, and describes briefly some sources of finance and the possibilities for refinancing and equity sales as the market matures.

Chapter three is a literature review, which discusses: general definitions and concepts of risk; the risky nature of large scale public projects; risk as it specifically relates to PPP including some contractual issues; risk identification and management strategies; and risks of refinancing.

Chapter four outlines the research methods used. It provides details of data collection processes, survey response rates and data analysis methods.

Chapters five, six and seven present the empirical evidence. Chapter five reports the results from the questionnaire survey, administered to senior and subordinate debt providers and equity investors. Chapter six provides details about the case studies, and reports findings about risk mainly from the perspective of public sector interviewees for comparative purposes. Chapter seven shows that the nature of the PPP organisational structure requires the transfer of risk between the private sector contributors to the deal. This creates the need for project supports, risk mitigation packages and professional advice that add cost and so increase the unitary charge. The consequent implications for risk transfer between the public and private sectors are then discussed.

The final chapter presents the conclusions, describes the limitations of the work, makes policy recommendations and identifies areas for further research.

2 Background to PPP Financing

Introduction

This chapter provides a brief background to the financing of PPP in the UK. It is intended to assist readers with no or limited knowledge of the financing arrangements that surround PPP. This chapter briefly describes:

- The size of the PPP sector in the UK.
- Expectations about the role of private finance in the provision of public infrastructure.
- Sources of finance.
- Refinancing and equity sales.

Size of the PPP sector in the UK

After a modest start in the late 1990s a wave of PPPs began to sweep the world in the early 2000s, and while a number of advanced OECD countries now have well-established PPP programmes, the best developed is the UK's (IMF, 2004). The size of the business opportunity in the UK is significant, with PPP capital expenditure totalling £62.8 billion by the end of 2008 across the UK's regions, as shown in Table 2.1.

Table 2.1 Signed PPP deals as at November 2008 by region

Region	£m	%
England	55,609.59	88
Scotland	5,377.99	9
Northern Ireland	1,283.30	2
Wales	535.16	1
Total	62,806.04	100

Source: HM Treasury, 2008, PFI statistics (compiled from www.hm-treasury.gov.uk/ppp_ppp_stats.htm – accessed 20 April 2009).

In 2009 the Treasury reaffirmed its commitment to the use of private finance, noting that there were 110 PPP projects in the pipeline, and that PPP would continue to account for typically 10 percent of public capital spending (HM Treasury, 2009b). At that time Government departments recognised the importance of managing a steady and certain flow of projects seeking funding into the market place, and published pipeline information. However, with the change of government there is market uncertainty about this pipeline flow. While the Labour government had announced intentions to bring forward capital spending to counter the recessionary downturn, such spending is not necessarily easy to accelerate, especially in sectors such as roads where planning permission is often contested. The June 2009 announcement of additional spending on housing focuses spending on an area that is generally relatively easy to accelerate. The intention of the new government and the impact of public spending cuts on PPP is uncertain, but politically the coalition favours private sector involvement in the provision of public sector services.

In terms of the annual spending commitment, the unitary charge payments made to the private sector for signed PPP deals has increased from £621million in 1998-1999, to £6 billion in 2008-2009 (HM Treasury, 2009a). Figures from the Comprehensive Spending Review (HM Treasury, 2007) show that future estimated payments will continue to rise as new projects come on stream – see Table 2.2.

Table 2.2 Estimated PPP payments – September 2007 (signed deals)

Projections			
Year	**£m**	**Year**	**£m**
2007-08	7043	**2020-21**	6686
2008-09	7663	**2021-22**	6335
2009-10	8133	**2022-23**	6430
2010-11	8482	**2023-24**	6381
2011-12	8664	**2024-25**	6399
2012-13	8807	**2025-26**	6166
2013-14	9001	**2026-27**	5981
2014-15	9037	**2027-28**	5869
2015-16	9147	**2028-29**	5530
2016-17	9244	**2029-30**	5242
2017-18	8635	**2030-31**	4617
2018-19	6775	**2031-32**	3990
2019-20	6861	**2032-33**	3621

The figures between 2007-08 and 2017-18 include estimated payments for the London Underground PPP contract. These contracts contain periodic reviews every 7.5 years and therefore the service payments are not fixed after 2009-10.

Source: 2007 Pre-Budget Report and Spending Review: the economy and public finances – supplementary charts and tables. HM Treasury, October 2007.

Thus for the private sector, PPPs present ongoing business opportunities in areas from which it was previously largely excluded (IMF, 2004).

While the vast majority of the expenditure has been in England, Scotland has had a higher percentage of its capital investment funded in this way. Fraser (2005) quotes an estimate in the *Public Private Finance Journal* that 30% of public capital investment in Scotland has been undertaken through PPP in most years since 1999, considerably higher than the journal's estimate of 10-15% of such investment in England. However, since Fraser's report, the Scottish National Party (SNP) was elected in 2007 and some change in policy direction has become evident. The SNP advocates the

Scottish Futures Trust to provide alternative models to PPP. The SFT will work with budget holders to identify affordable solutions using public and private finance as appropriate, and will advise on funding and financing approaches (SFT, 2010).

In Northern Ireland the Strategic Investment Board Limited (SIB) plays a key role in supporting the Northern Ireland Executive (the executive arm of the Northern Ireland Assembly) and government departments in delivering the Investment Strategy for Northern Ireland (ISNI). This strategy involves procurement worth £20 billion, primarily through PPP projects, during the period 2008 to 2018. Roads, schools and hospital projects will respectively account for £4.0 billion, £4.1 billion and £3.7 billion of the total expenditure (Strategic Investment Board, 2008). Funding will flow from the Department of Finance and Personnel, one of 11 Northern Ireland Executive Departments whose role is to prioritise the use of resources available to Northern Ireland, ensuring that these are used efficiently and to secure the reform and modernisation of public services.

By way of contrast Wales has been relatively unenthusiastic about PPP, as evidenced by the small value of £535m signed deals, representing just 1% of UK signed deals.

The role of private finance in the provision of public infrastructure

Two rationales for the use of PPP by government may be identified. Firstly, a macro-economic argument that the use of private finance enables investment that the government could not otherwise afford, and secondly, a micro-economic argument that the involvement of the private sector introduces to an overly bureaucratic public sector a range of efficient management practices and techniques which should increase value for money.

Table 2.3 shows an assessment from PricewaterhouseCoopers (PwC) (2008) of the intended roles of the private sector debt and equity providers in this process, together with their assessment of the actual outcomes in practice. This table shows their assessment that the macro role has been fulfilled, although without any specific public policy purpose having been

served. It also shows micro-level expectations that senior debt providers would bring discipline to the process of providing infrastructure in terms of their requirements for due diligence, subsequent monitoring of the contracts, and expectations that equity involvement would create integrated projects and enhance long term management and performance. Their assessment of the micro-level outcomes may be described as mixed.

PwC provide detailed explanations of some of their assessments, however as PwC admit, these assessments are arguable, and the tables in their report summarised above provide a rather more positive view than might be expected from a close reading of the detailed analysis. For example, despite the 'yes' assessment shown above in relation to 'early warning of failing projects during the construction period', PwC admit that early warning has not been given on all failing constructions. They cite the National Physical Laboratory project as an example where early warning did not occur (PwC, 2008).

Table 2.3 Intended and actual roles of debt and equity

Intended roles: debt and equity	**Actual outcomes debt**	**Actual outcomes equity**
Provider of finance	Yes – but no public policy purpose served	Yes – but no public policy purpose served
Losses incurred if project fails	Yes, but very limited	Yes – several examples
Intended roles: senior debt	**Actual outcomes debt**	
Discipline in risk analysis/ allocation	Definitely. Major cultural change in public sector procurement and risk	
Due diligence	Yes. Stark contrast with non-privately financed projects	
Ongoing Monitoring of project throughout contract	Omitted from PwC tables	
Early warning of failing projects	Construction period: Yes Operational period: Insufficient data	
Step in and sort out failing projects	Banks have not stepped into projects even though allowed under the Direct Agreements, therefore rather disappointing	
Intended roles: equity		**Actual outcomes equity**
Integration of design/build/ operate/maintain skills		Yes – but to different degrees in different sectors
Long term performance management		Too early to conclude. With some notable exceptions, the early evidence is positive
Long term client management		Jury still out, but some good signs
Dealing with emerging problems		Some signs

Source: Table adapted from PwC (2008).

Sources of finance

The private sector can raise finance for PPP type investments in a number of ways (IMF, 2004). First, where services are sold to the public or to the government, the private sector can go to the market using the projected income stream from a concession as collateral. Second, financing is often provided by an SPV, although the International Monetary Fund (IMF) warns that these can be used as a veil behind which the government controls a PPP, via direct involvement of public financial institutions, explicit guarantees of borrowing, or a presumption that the government stands behind the project. Third, where the government has a claim on future project revenues it can contribute to the financing of a PPP by securitising that claim (IMF, 2004). In the UK, financing for most PPP projects is raised via an SPV, which uses projected income streams as collateral. Financing may take a number of forms, the most important of which are senior debt and equity.

Senior debt

Senior debt is generally provided by investment or commercial banks and for larger projects by a bond issue. PPP deals are typically highly geared, so that senior debt is usually about 90% of the total finance. The commercial banks lend their own rather than third party money but, prior to the credit crunch, these banks were also showing interest in developing a bond capacity. Usually, bonds are raised by the project in its own name and will be rated accordingly (Moody's, 2007a). Typically PPP projects are designed to attract a low investment grade rating, either triple B minus or triple B. As such paper is very expensive to raise, credit enhancement will be purchased by using a wrap from a triple A rated mono-line insurer, who carries the credit risk of the project. Prior to the credit crunch the number of these insurers, who are mainly American and European, was relatively small, although the market was growing. The PPP project could benefit because there was sufficient arbitrage between the price charged by the mono-line and the reduced cost of debt. In the credit crunch era the mono-lines can no longer provide this advantage, and the market for new deals has essentially collapsed although there is ongoing monitoring of existing deals.

A further impact of the credit crunch is that debt costs are rising but since yields are falling, the net impact on cost to the public sector remains unclear. A major constraint in the UK market is a lack of lending capacity, which has seen the number of active PPP lending institutions reduce, as well as reluctance on the part of the remaining players to finance deals. Recent deals have relied on a pre-financial close syndication of banks each lending a proportion of the total, where previously it was more likely that a lead bank would have provided the senior debt, perhaps seeking some syndication post financial close. The lack of capacity in the UK market caused the Labour government to intervene.

In its pre budget report the Treasury noted that:

> *The government is encouraging the European Investment Bank to continue lending more, to lend faster and to take on more risk.* (Treasury, 2008, p. 69)

But more dramatically, in March 2009 Yvette Cooper, Chief Secretary of HM Treasury, announced the Labour government's intention to lend public money to PPP projects that cannot raise sufficient debt finance on acceptable terms and for which appropriate funding is not available from the market (House of Commons, 2009).

The intention was that loans would be made available to all PPP projects in procurement. While the Treasury statement did not estimate the cost of this intervention, Leitch (2009) suggested a value of between £1bn and £2bn over 12 months, while Millett (2009) argued that it secured the future of a £13bn pipeline. The initiative was described as a temporary intervention (House of Commons, 2009), but proved politically controversial.

Equity

In the context of PPP, equity is normally defined as any kind of financial instrument junior to senior debt, including subordinated and mezzanine debt. Equity may be provided either by the project's sponsors, usually members of the group of companies that will provide the construction

and facilities management services, or by third party investors, normally independent private equity funds. Pure equity is often a very small percentage of the typical 10% total equity in the deal, and is often described as pinpoint equity. Subordinated debt, which is often conflated with equity because it is at risk before senior debt, represents the balance of the required finance.

During the credit crunch the availability of equity has been perceived in the UK as much less of a constraint than debt, although this perception is inconsistent with the global evidence cited in chapter one that senior debt has risen and equity fallen as a proportion of total funding for PPPs in 2009 compared to 2008.

In terms of background to the study it is also important to note that the requirements of Basel II came into effect in the European Union in January 2007 and are mandatory for all lenders covered by the Capital Requirements Directive from January 2008. There has been a considerable amount of debate about the impacts of Basel II (CML, 2008), which may affect not only the availability but also the pricing of senior debt, although the intention is that the aggregate level of capital requirements should be broadly maintained (BIS, 2004).

Basel II

Basel II (BIS, 2006) is a framework that describes the measurement of and sets a minimum standard for capital adequacy of internationally active banks. The objective of the Basel Committee on Banking Supervision was to revise the 1988 Accord, Basel I, 'to develop a framework that would... promote the adoption of stronger risk management practices by the banking industry… and arrive at significantly more risk-sensitive capital requirements' (BIS, 2004, p. 2). However, it is also important to recognise that this committee also aimed to ensure that 'capital adequacy regulation will not be a significant source of competitive inequality among internationally active banks' (BIS, 2004, p. 2). The revised framework, which consists of three Pillars, covers the measurement of capital, supervisory review processes and market discipline and disclosure.

In terms of measurement of required capital, Pillar 1 offers banks the opportunity to use either a foundation or advanced internal ratings based approach as distinct from the required standardised approach to measurement of Basel I. It is expected that banks will see a modest release of regulatory capital in moving from the standardised approach through the foundation and advanced mechanisms (CML, 2008). However, Pillar 1 includes a new category of operational risk that arises from inadequate internal processes, which is likely to raise the minimum capital requirement. In addition, Pillar 2 identifies further risk factors and allows regulators to adjust capital requirements. For most lenders the Pillar 2 process is expected to result in a higher regulatory capital than that calculated under Pillar 1 (CML, 2008). Pillar 3 aims to increase transparency by requiring banks to make disclosures about risk management and risk distributions.

Refinancing and equity sales

Initially there was uncertainty about whether investors would be able to exit PPP investments. However, as the PPP market matured and the early deals moved out of the construction phase into the operating phase, over time two developments occurred: refinancing and equity sales.

Refinancing

The construction phase is usually considered to be more risky than the operating phase of PPP projects from the financiers' perspective, and as the market gained experience of PPP it became possible to refinance successful projects. This generally accelerates the benefits for investors – although the cash over the full project may decrease – increasing the internal rate of return.

The National Audit Office (NAO) (2006, p.5) found that in most early PPP projects, the investors had received a range of internal rates of return from less than 10 to over 70% after refinancing. In a fifth of these projects the investors' internal rate of return following refinancing had risen to over 50%. These refinancing deals became very controversial when the public

became aware of the size of the gains made by the private sector, especially in the politically sensitive health sector.

As a consequence of this controversy a voluntary code of practice was agreed between the Treasury and the private sector, which would provide a 30% share of refinancing gains for the public sector, although not all projects did benefit: three projects led by the Highways Agency did not participate in gain sharing (NAO, 2006). Deals signed after July 2002 incorporate a 50:50 sharing arrangement in the contract, and future deals will be subject to more stringent requirements, effectively increasing the benefit to the public sector. While noting that the public sector had acquired the right to refinancing gains of £137 million, £72 million coming from voluntary sharing, the NAO also noted that these gains were significantly less than the original estimate from the Office of Government Commerce (OGC) of potential benefits as refinancing activity has slowed (NAO, 2006).

This reduction in refinancing activity may be attributable in part to a maturing market in which the commodification of finance products results in a smaller differential between the cost of finance pre and post the construction phases, and in part because the need to share the benefits with the public sector rendered the high fixed costs of refinancing uneconomic, especially for smaller deals (NAO, 2006).

Equity sales

The second development was the growth of a secondary market, enabling investors in the original project SPV to sell their shares to financial investors who were attracted by the potential return on investment available over the remaining term of the project (NAO, 2006).

With their revenue streams emanating from government agencies, such PPP investments might be expected to be attractive to pension funds seeking long dated cash flows against pension liabilities. However, this potential market is relatively untapped. In practice, buyers in the secondary market are existing investors and specialist secondary market equity funds established to build portfolios in PPPs. Specialist secondary funds were mainly set up to buy 100% of the equity of operational projects, becoming active asset

class managers specialising in specific sectors, although some funds have acquired minority interests as passive partners.

Potentially there are two benefits to portfolio building. The first is that investors achieve operational efficiencies, and the second is that they improve financing terms. While theoretically investors could seek to improve the financing of the whole portfolio as opposed to individual projects, there is little evidence of this type of action (NAO, 2006), possibly because most contracts require permission from all equity holders and the public sector procurer to change the financing arrangements.

The secondary market is becoming increasingly significant and there is now a reasonably assured market to sell shares in successful projects, since the levels of return in this type of project have been attractive relative to other asset classes (NAO, 2006). There has been a significant amount of equity churn, and also some apparent reluctance to be transparent about selling of equity interests. In a survey of 123 PPP projects by the NAO, no response was given about sales of equity interests in relation to 45 projects. For those projects about which a response was received, the NAO reports that 40% had seen a change in investors (NAO, 2006).

Since the contract to buy and sell shares is between two private sector parties, any profits or losses need not be disclosed. However, noting that an in-depth understanding of financial modelling in PPP transactions can enable secondary market players to realise significant refinancing gains, the NAO (NAO, 2006, p.8) calls for the Treasury to monitor these transactions to ensure that their purpose is not to avoid sharing refinancing gains. Furthermore, the NAO argues (NAO, 2006, p.32) that disclosure of profits or losses on equity sales would increase transparency, and provide insight into the risks and rewards that the private sector experiences from PPPs, together with a better understanding of the dynamics of PPP equity investment.

Summary

This chapter provides a brief introduction to the size of the PPP market in the UK and the value of future annual unitary charges. It explains that the rationale for using PPP is both the macro-economic need for finance, and also expectations that this finance would generate other micro level

benefits. The chapter explains that as the PPP market matured, initial fears that primary investors might be unable to exit the market were not realised, due to refinancing and the growth of the secondary market. During the credit crunch era, sources of finance especially senior debt have become so restrained that ironically the government was forced to provide public money to support an initiative aimed at using private finance.

3 Literature Review of Risks in PPP Contracts

Introduction

The previous Labour government's reliance on PPP contracts in the public sector shifted traditional responsibilities for providing public services from central and public control to private sector institutions. The more business-like approach is part of an ongoing and wide ranging reform of the public sector that is intended to make the public sector more like the private sector, thereby enabling the two sectors to work more closely together (Bennett and Krebs, 1991). However, PPPs remove expenditure from the direct control of the public sector (Grout and Stevens, 2003), and the available evidence shows that perverse consequences may occur from using private sector measurement systems in the public sector (Demirag and Khadaroo, 2008). Other examples of perverse consequences include the privileging of activities that are measured and rewarded, and the driving out of those that are unrecognised, invisible and unbudgeted (NAO, 2006).

Prior studies have mostly examined PPP projects from the perspectives of the public sector and the private sector contractor (Broadbent and Laughlin, 2002, 2003, 2005; Edwards and Shaoul, 2003a, 2003b, 2004; Froud, 2003; Broadbent *et al.*, 2003 and 2004; Demirag, 2004; Edwards *et al.*, 2004; Bing *et al.*, 2005a&b; Demirag *et al.* 2005; Khadaroo, 2005, 2008; Shaoul, 2005a, 2005b; Shaoul *et al.*, 2008). The findings of these studies indicate a complex set of relationships between the state, the contractors and the financiers of PPP projects. Very little research exists which explores PPP financiers' perceptions of risks, although Gallimore *et al.* (1997) argue that the construction industry has a significantly different perception of the risks, returns and structures necessary for PPP compared with other stakeholders, particularly financiers.

This project focuses on the financiers' perceptions of risks, and the following sections review the relevant literature using the following structure:

- General definitions and concepts of risk.
- The risky nature of large scale public projects.
- Risk in the context of PPP.
- Contractual issues – risk allocation, risk transfer and pricing.
- Generic risk identification and management techniques and strategies.
- Public and private sector approaches to risk assessment.
- Risks of refinancing.

General definitions and concepts of risk

Although PPP was not originally devised as a policy for managing risk, risk has emerged as a key feature that legitimates the shift in public services management (Froud, 2003). This section therefore briefly examines the concept of risk.

In project management and operations research disciplines, it has long been common to make a distinction between risk and uncertainty. The Treasury (HM Treasury, 1997, p.36) describes risk as 'referring to the likelihood of something going wrong', and uncertainty meaning that 'the outcome of a course of action is indeterminate or subject to doubt'. This distinction has also moved into accounting literature, although PPP may rest on a conceptual conflation of risk and uncertainty (Froud, 2003). Froud (2003, p.569) indicates there is little agreement on what these terms mean, although the distinction is centrally concerned with 'calculable probabilities'. Where there is no possibility of placing a numerical probability on whether an event will occur or not, the unclear future state is referred to as an 'uncertainty'. Risk, therefore, involves the possibility of placing some 'calculable probability' on a future event occurring (Broadbent *et al.*, 2008).

While in psychological literature, risk is generally believed to be a multi-dimensional construct that comprises a number of perceptual dimensions (Williams *et al.*, 2003), risk is taught in financial textbooks with a focus on a single number, such as the variance of the possible outcomes that may arise

in the future (Helliar *et al.*, 2001). However, in practice Helliar *et al.* argue that managers tend to ignore probabilities and do not calculate expected values for different decision outcomes. Instead, they argue, managers focus on the size of any possible loss; they exhibit loss, rather than risk, aversion. Gallimore *et al.* (1997) argue that this restricted interpretation is closer to the view of financial investment taken by the public sector. In particular, psychological literature suggests that behaviour will be impacted on by the extent to which people believe the consequences of risky decision making will be personally relevant (Williams *et al.*, 2003).

The risky nature of large scale public projects

Shen *et al.* (2006) make a general point that large scale public works' projects are more risky than other business activities because of the complexity of co-ordinating a wide range of disparate and inter-related skills and activities. They also argue that this complexity is compounded because public sector projects tend to have multiple stakeholders whose objectives and interests are different. Furthermore, public projects are more risky because the infrastructure is user specific, for example, a road or hospital. While it may be possible to minimise such risks by flexible building designs, there remains the potential for financial loss related to user specificity (Rodney and Gallimore, 2002), that may be less relevant to private sector projects.

In addition, projects of national importance are particularly subject to the dangers of entrapment, that is, increasing commitment to an ineffective course of action, because of managerial motivations, social pressures, organisational inertia and political forces (McElhinney and Proctor, 2005).

Risk in the context of PPP

It is recognised that risk transfer is a critical element of PPP, and its proponents argue that it brings benefits including improved delivery of projects and maintenance of infrastructure, elimination of over-specification, and better delivery of services (Dixon *et al.*, 2005). Thus risk management

is an important element of PPP. Although the intention is to transfer risk from the public to the private sector, in practice some risks cannot be transferred and some risks must be shared. Consequently both sectors must work together, and there must be 'agreement of the minds' (McKim, 2005, p.604) about how risks are to be transferred and managed. In practice it is not clear that organisations have achieved such agreement. Partners typically have different perceptions of proper risk allocation (Abednego and Ogunlana, 2006), and private partners may be reluctant to carry certain risks (Singh and Kalidindi, 2006). Thus Nisar (2007) argues that the public sector needs to place more emphasis on strategies to transfer risk, for the successful conclusion of PPP projects.

There is concern that public sector organisations are not sophisticated in risk management processes, with the consequence that the standard form of PPP contract does not generally offer an optimal allocation of risk (Quiggin, 2005). However, the lack of sophistication may also extend to the private sector. For example, Rodney and Gallimore (2002) conclude that private developers use simple sensitivity analysis, which they describe as a limited technique incapable of measuring risk. As a consequence risk may be mis-priced, and in relation to Australian PPP deals, Keating (2004) argues that this may occur because there is keen competition for deals and the government equates low cost with value for money.

Edwards *et al.* (2004) examine the structure and performance of PPP in roads and hospitals. In particular, they examine the costs of PPP to the public sector and the profitability of PPP to the SPV, but do not include an examination of the returns made by the financiers. They conclude that PPP appears to be an expensive proposition for the public sector, and argue that more transparent financial reporting is essential to assess the performance of PPP contracts. Broadbent *et al.* (2004) examine the role of management accounting in the processes of PPP decision making, post-implementation monitoring and evaluation in the National Health Service. They conclude that 'discourse' with PPP stakeholders is required to arrive at 'periodic' judgment about VFM and that the management accounting system, and its subsequent audit by the NAO, is important for assessing VFM. Broadbent *et al.* (2004) suggest that although the financiers of PPP contracts are one of the more important stakeholder groups, their perceptions may vary from those of other key players.

Contractual issues – risk allocation, risk transfer and pricing

In the case of PPP, project risks can be minimised, shared, transferred, and managed by the contracting parties (Akintoye and Chinyio, 2005). The Treasury's general principle of risk transfer is that risks should be transferred to the parties best able to manage them (HM Treasury, 2003). There are many types of risks in PPP projects, including political, operational and financing – see appendix one for a comprehensive list. Not all are appropriate for transfer to the private sector. For example, McDowall (2003) shows how risks might be allocated between partners using an operational facilities management risk allocation matrix, which illustrates how PPP partners consider risk.

Bing *et al.* (2005b) argue that the allocation of PPP risks between the public sector and private sector is not always obvious. A number of studies have examined how risk is allocated in practice. In their paper examining the lessons learned from pilot PPP projects in Ireland, which is also one of the few published studies covering PPP financing risk, Reeves and Ryan (2007) describe the complex allocation process in the schools' sector. Complexity arose firstly because some risks, such as statutory planning approval and business risks, are shared. Secondly, risk allocation may be re-negotiated part way through the contract, as was the case for information technology obsolescence, which was allocated to the private sector for the first three years only. Thirdly, the allocation of finance risks may be dependent on performance. Although the private sector is responsible for raising all required finance, in the event of SPV default the public sector becomes liable for the senior debt payments (Reeves and Ryan, 2007, p.334).

Although he provides very little empirical evidence, Keating (2004) argues that in Australia the government is trying to transfer to the private sector a lot of risk which the banks in turn shift to the construction contractor. He also points out that the structure of deals insulates debt investors from holding as much risk as possible.

Pollock and Price (2004), in a study carried out on behalf of UNISON, show that the structure of PPP deals obscures the relationship between risk and the risk premium for two reasons. Firstly, as the SPV is only a

shell company, it transfers risks to other companies through subcontracts. Secondly, risk transfer is carried out through a variety of complex financial mechanisms which make it difficult to assess its value. They show that the government's claim that the higher costs of private finance are due to risk transfer is largely unsubstantiated.

Furthermore, Pollock *et al.* (2007) argue that the Treasury's claim of improved efficiency in terms of project delivery to time and budget is not substantiated by empirical evidence. Demirag and Khadaroo (2008) found that in practice VFM is a much more complex and obfuscated concept than is presented in the Treasury's publications. Pollock *et al.* (2007) conclude that the Treasury's Green Book which compares PPP with other methods of procurement is biased to favour PPP.

Other studies have examined how risks ought to be allocated. In general, Bing *et al.* (2005b) argue that most macro-level risks – for example: political, legal, social and economic risks – and other risks which are 'exogenous' to the project should be borne by the public sector, but that project related risks should be allocated to the private sector. However, these authors recognise that a high risk premium may lead the public sector to reschedule risks by sharing or retaining more of them (pp. 26-27) to reduce the contract price. Shen *et al.* (2006) argue that an 'effective' risk allocation occurs if: site acquisition, and legal and policy risks are allocated to the public sector; design and construction, operation and industrial action risk are allocated to the private sector; and development, market, financial and force majeure risks are shared between the two partners.

Abednego and Ogunlana (2006) argue that because parties involved in PPP projects have different perceptions of risks, good project governance systems are essential for proper risk allocation and ultimately for the projects' success – inadequate specification of requirements and improper allocation of responsibilities among the contracting parties are the main problems faced by the public sector. Risks are considered only when they materialise, and solutions are sought in response to the threats posed to minimise losses. The contracting parties are satisfied with risk allocation so long as its consequences are minimised. Moreover, the risk management strategy adopted is geared towards problem-solving rather than taking preventive actions (Abednego and Ogunlana, 2006).

Generic risk identification and management techniques and strategies

When it is impossible to eliminate risk, some form of risk management is needed. To manage risks effectively they must be identified, analysed and controlled (Akintoye and Chinyio, 2005), and it is necessary to measure and respond to the risks associated with exposure to loss (McKim, 2005). Risk management may involve minimising, sharing or transferring risks to another organisation. In the context of PPP, the cross-organisational management of transferred and shared risks is especially relevant.

There are many generic techniques available for the identification of risk. These include the use of intuition, personal experience including the benefit of hindsight, investigative interviews, surveys, research, checklists, brainstorming, consultation, event and fault trees, HAZOP studies, and risk and safety reviews (McKim, 2005).

Various approaches have also been developed to appraise risk, and there is balance to be sought between cost and effectiveness. Rodney and Gallimore (2002) note that certain primary healthcare projects are subject to particular risks, and recommend the use of a common and systematic format for the appraisal of projects. Their paper examines three approaches to decision making under uncertainty (sensitivity testing, scenario analysis, and simulation), but concludes that simple sensitivity, if used properly, is sufficiently robust to identify the most important variables in a development appraisal. This technique is recommended by the Treasury for PPP risk appraisal (HM Treasury, 1997). Other techniques include scenario analysis – which examines the interaction of changes in critical variables, and simulation – a development of probability analysis which the Treasury only recommends for large or complex projects (HM Treasury, 1997).

Akintoye and Chinyio (2005) find that a number of risk assessment and management techniques are used in healthcare PPPs, but that experience is the prime risk assessment technique employed. Risk prompts such as risk registers or checklists are useful to identify risks, and insurance cover and sub-contracting are the most prominent strategies for managing risk. Those authors conclude that risk management techniques in use are generic

in nature but that there is a lack of evidence that these are appropriate for PPP projects.

Not every risk identified will be captured in decision making processes. For example Broadbent *et al.* (2008) argue that because of the pervading power of 'accounting logic', which aims to capture everything of importance through measurement technologies and thereby marginalises anything which cannot be measured, quantitative risk estimation is given more consideration than 'qualitative uncertainties' in PPP decision making processes. Furthermore, Ng and Loosemore (2007) argue that risk allocation and management are difficult tasks in PPP projects primarily because of the technical, legal, political and economic complexity of infrastructure projects, and the many different stakeholders involved.

Ng and Loosemore (2007) posit that the complexity of PPP arrangements and the high tendering costs may increase public sector risk rather than reduce it. These authors argue that financial institutions and service providers will demand high risk premiums to compensate for the risks and uncertainties assumed over the life of the contract, especially as the way that risk profiles change over the duration of PPP projects is not well known. They conclude that political pressure may motivate policy makers to disregard these processes. Broadbent *et al.* (2008) state that the main issue with project procurement is a contradiction between providing 'flexible' services and the macro-economic need to provide immediate capital investment. They suggest that the Government sees the sunk costs of conventional procurement as no more flexible than those of PPP contracts, but has made the political decision to choose the latter.

Public and private sector approaches to risk assessment

It has been argued that the public sector has little knowledge of how risks are modelled and valued in PPP. For example Ahadzi and Bowles (2004) find that, compared to the private sector, the public sector does not have adequate financial capabilities. Hood and McGarvey (2002) find that local government councils in Scotland are 'ill-prepared' to negotiate and manage risks in PPP contracts, that there is a lack of continuity of staff involvement with projects, and risk management is limited to concerns about

insurance. Furthermore, these authors argue that the private sector possesses substantial advantage over the public sector in 'risk negotiation', so that the risks assumed by the public sector are increased, adversely affecting VFM.

Gao and Handley-Schachler (2004) find that public sector organisations are risk averse, reflecting their main concerns of safeguarding public funds and providing public service. Risk aversion is demonstrated by the willingness to pay a higher price for the use of assets, so long as the price is guaranteed or stable. The public sector is reluctant to get involved in income-generating activities by using PPP assets because public sector organisations have little knowledge or experience about how the risks associated with these activities can be assessed and managed, especially when these activities are not related to their core businesses.

English and Guthrie's (2003) work confirms the powerful position of the private sector. They find that Australian state governments are not as successful as private sector consortia at identifying and transfering risk. However, they argue that governments and private consortia have become over time more practised at optimising VFM and risk sharing, to drive down project costs and remove PPPs from public sector balance sheets and budget papers.

Bloomfield (2006) argues that trust in dealing with the private sector will not solve the challenges posed by the risks of uncontrollable circumstances, the impact of resource constraints and barriers to transparency in long-term contracts. He argues that performance contracts to commit the private sector to achieve specific results and transparency are essential for successful risk allocation and to reduce the risks to the public sector. However, the actual implementation of these performance contracts can be problematic and require independent, unbiased specialists to protect the public interest in managing, monitoring and enforcing these contracts.

Dixon *et al.* (2005) argue that there is a direct relationship between PPP project risks assumed by the SPV and the cost of finance. Therefore one of the main objectives of the SPV is to minimise risks in order to minimise the costs of finance. The SPV will therefore attempt to pass risks to subcontractors, thereby limiting its own risks. These authors posit that financiers should be involved at the early stages of PPP projects to ensure that their criteria for funding can be met and to avoid high financing costs.

However, one impact of the financiers' involvement may be that some risks revert to the public sector through government guarantees to senior debt holders in respect of contractor obligations or liabilities (Hood and McGarvey, 2002; Alonso-Conde *et al.*, 2007). Alonso-Conde *et al.* (2007) conclude that such guarantees may reduce uncertainty when estimating project cash flows, although the valuation of such options is fraught with difficulties. Furthermore, they argue, the cost and risks of such guarantees seem neither transparent to nor well understood by the PPP stakeholders, including the financiers.

Credit assessment, cost and pricing procedures may lack validity. For example, Cheng *et al.* (2007) posit that credit scoring models used to assess creditworthiness of loan applicants are subjective. Dixon *et al.* (2005) note that their interviewees were concerned that the true cost of PPP was being disguised by over-generous assumptions about risk transfer and discount rates that are too high, and call for the use of whole life costing techniques that cover the costs and benefits over the full contract and not just the procurement and development stages.

There is a need for decision making models to continually evolve to take account of the ever-changing business environment. In this respect, Cheng *et al.* (2007) posit that the various assessment criteria and their relative weights need to be carefully monitored and adjusted regularly to improve their reliability. Moreover, the authors state that once PPP financing has been approved, it is essential for banks to monitor the financial performance of borrowers and their ability to meet their financial obligations during the concession period.

Risks of refinancing

Two NAO reports (NAO, 2000 and 2005) draw attention to the outcomes of the refinancing of the Fazakerley prison and the Norfolk and Norwich hospital projects, which raised serious concerns from a public interest perspective about the significant gains made by financiers from these projects. More general reports (NAO, 2002 and 2006) have examined a wider range of issues about the PPP debt refinancing and equity market. These reports note that there are potential disadvantages for both the public

and private sectors associated with refinancing, as well as the opportunities for the financiers. Refinancing can generate new uncertainties and risks because the future flow of income cannot be predicted with certainty if the partners take their gains and move away from the projects. The following risk related issues were raised in the NAO report of 2006:

- additional risks may fall on the public sector.
- the extension of the contract period may create additional risks for the public sector.
- taking benefits early may reduce incentives for the private sector to provide the same quality of service delivery as before the refinancing.
- after refinancing, the repayment of debt may be adversely affected by any poor service performance, although equity investors argue that as the private sector expects to gain future benefits from the projects there is an incentive to ensure that contractors continue to perform.

Summary

Although the literature makes a 'calculable probabilities' distinction between risk and uncertainty, this chapter notes that in practice probabilities may be ignored, as decision-makers focus on the size of expected losses. While there are a range of risk assessment and management techniques available, in practice decision-makers may lack sophistication. There is some evidence that in the private sector decision-makers have more financial and negotiating capabilities than their public partners.

Although PPP was not originally devised as a policy for managing risk, risk has emerged as a key feature that legitimates the shift in public services management (Froud, 2003). This review of literature identifies the following themes:

- Financial models that assess risk may be subjective.

- Not all risks can be captured in decision making models, but those that are will usually be quantitative in nature.
- Risk allocations between contracting parties are not obvious and may be complex in practice.
- Macro-level and exogenous risks should be retained by the public sector.
- Standard contracts may not provide an optimal allocation of risks.
- Mispricing of risk may occur under competitive pressures.
- There is a need for unbiased and independent specialists to protect the public interest.

Most of the literature examines PPPs from the perspectives of the public sector or the contracting entities but does not examine the perceptions of the financiers. The next chapter describes the research methods adopted for the present study of financiers' perceptions of risk.

4 Research Methods

Introduction

The methods used to explore the research questions and achieve the research objectives include a survey and interview-based case studies supported by information in the public domain. This chapter describes how empirical data were collected and analysed for the:

- Survey of PPP financiers.
- Interview based case studies.

Survey of PPP financiers

The initial stages of the research involved the creation of a database of PPP financiers, and the design of a general survey questionnaire that was central to understanding the financiers' perceptions of risks. Thereafter this section describes the survey administration and data analysis.

Creation of database and design of survey questionnaire

A database of equity and senior debt financiers was created by drawing from the PartnershipsUK's database of PPP projects – see www.partnershipsuk.org.uk. The key players involved in the PPP projects were identified and contact details of 109 heads/directors of PPP project finance were added. The survey database also included the contact details of 69 pension fund managers and directors, which were obtained from the Institute of Pension Managers.

A survey questionnaire was developed from a preliminary literature review and three pilot interviews conducted in June 2006. The questionnaire was revised on the basis of feedback from a sample of PPP equity and senior debt financiers, PPP consultants and academics. The survey questions are

summarised in the tabulations of responses in chapter five, but a copy of the original survey may be obtained from the researchers if required.

Administration of the survey

The first round of the survey was administered to 109 equity and senior debt financiers and 69 pension fund managers towards the end of July 2008. A total of 30 positive replies and 37 negative replies were received by the middle of October.

A second round survey was posted in late October 2008. Follow-up telephone calls were conducted towards the end of October and in November. These telephone calls revealed that 39 of the original 178 contacts had left their companies. Revised contacts were invited to participate in the survey and 15 additional replies were received. Overall the response rate was 45/178 = 25.3%.

However, this overall response rate requires further explanation. Of the total of 69 pension fund managers, ultimately only two responses were received resulting in an unusable response rate. Therefore, the analysis in chapter five is based only on the 43 responses from equity and senior debt financiers, representing a response rate of 43/109 = 39.4%. Feedback suggests that the very low response rate from the pension funds is due to the lack of relevance of the questions to these potential investors.

Survey – data analysis

The 43 responses received from the equity and senior debt financiers were coded into SPSS for analysis. Each question was numbered and coded. For example, replies to the first question, question 1.1, which asked respondents about the type of finance they mainly provide to PPP projects, were coded as Q1.1finprovequity, Q1.1finprovsenior, Q1.1finprovsubor, Q1.1finprovbond, Q1.1finprovother, to identify the type of finance provided.

General descriptive statistics including frequencies and measures of central tendency were produced where appropriate. As chapter five shows,

the response rate varied throughout the questionnaire although most questions were answered by the majority of participants.

In order to gain an overall picture of responses, in some sections of the questionnaire the variables were grouped and recoded into smaller categories. For example, the original classifications of 1 = very important, 2 = important, 3 = of little importance, and 4 = not important, were conflated to two categories: important and not important. Similarly, categories strongly agree and agree, and strongly disagree and disagree were grouped into agree and disagree respectively.

Follow-up interviews with survey respondents

A total of eight follow-up interviews were conducted with survey respondents who were selected at random from those respondents who provided their contact details. Follow-up interviews were carried out between February and June 2009. The objectives were to discuss some of the issues examined in the questionnaire in greater depth and to determine the rationale for the respondents' replies.

Interview based case studies

Six projects were developed as mini case studies in order to examine perceptions of risks in the public sector for comparison purposes. These cases were chosen to cover five sectors – roads, hospitals, schools, prisons and social housing – since risks may differ between sectors. The cases are located in three regions of the UK. The housing case is in England, the prison and health cases are in Scotland, and the two schools and the roads cases are in Northern Ireland.

Case studies and respondents

The interviews relating to the case studies were carried out between June 2006 and May 2009, and overlapped with the administration of the survey. A total of 18 interviews were conducted with 19 respondents involved in

the case studies. Table 4.1 shows the job title of the interviewees, and the type of organisation.

Table 4.1 Interview schedule

Case studies	No.	Job title of interviewees	Organisations
The prison case	1.	Commercial director	Facilities management
	2.	PPP team leader & director	Bank
	3.	SPS contracts manager	Public authority
The hospital case	4.	Managing director	Equity provider
	5.	Head of project finance	Bank
	6.	Director of capital planning and investments	Public authority
	7.	Assistant director of capital planning and investments	
The first school case	8.	Managing director and head of infrastructure	Equity provider
	9.	Associate director and head of infrastructure	Bank
	10.	Project manager	Public authority
The second school case	11.	Commercial Director	Equity provider
	12.	Director – Corporate and Business Banking	Bank
	13.	Head of PPP procurement	Public authority
The housing case	14.	PPP project coordinator	Equity provider
	15.	Corporate banking manager	Bank
	16.	Senior policy officer	Public authority
The roads case	17.	Managing director, strategic developments	Equity provider
	18.	Associate director and Head of project finance	Bank
	19.	Project leader	Public authority

For each case, the equity partner, senior debt provider and public sector partner were identified for interview using the snowballing technique and from the PartnershipsUK projects database. Most of the private sector equity partners interviewed were managing directors of the SPVs. The senior debt providers interviewed were senior directors from banks. The public sector interviewees were senior staff close to the projects.

A cover letter summarising the research objectives was provided to all potential interviewees. To allow interviewees to answer fully and reduce interviewer effect or reactivity (Hammersley, 2008), a semi-structured interview questionnaire was provided and/or follow up questions were asked as appropriate. On average, interviews lasted between one and a half to two hours. A copy of the interview schedule may be obtained from the researchers, if required.

Data analysis

Interviews were tape recorded (with permission), transcribed, coded and keyed into software package Nvivo for analysis. Codes are attached to segments of data, so that all segments of data with the same coding can be retrieved quickly and easily. Interview data were coded drawing on key themes initially identified from the literature, for example, codes for risk transfer and refinancing. These themes were expanded to incorporate new issues raised by the interviewees, for example agents who offer advice, and sector specific risks.

The coding structure shown in appendix two was designed to enable the identification of themes relevant to the industry and individual projects, and to separate responses from different players in the field. To analyse the data, all interviews were read in full several times and themes were extracted from the coding process, being mindful, by checking back to the full interview, of the context in which each coded section was provided. Sample quotations were retrieved from the codes. The interpretation presented draws on common perceptions provided by many interviewees, but also draws attention to alternative perspectives, as appropriate. To reduce the potential for bias and to identify contrasting viewpoints, the key themes were triangulated across interviewees and secondary data sources.

In order to protect the confidentiality of our interviewees, the following codes are used to identify their backgrounds. Interviewees from banks or financial institutions providing mainly senior debt are coded SD 1–8, those from institutions that provide mainly equity are coded E 1–7, interviewees from organisations that provide equity but also are contractually responsible for the construction of the infrastructure or the provision of operating phase facilities management services are coded CE 1-8. Finally, interviewees based in the public sector are coded PS 1-8.

In total, including the pilot, questionnaire follow-up and case based interviews, 31 people participated in 29 interviews. All codes have been allocated at random so that there is no relationship between the code numbers and the order in which the cases are presented. Furthermore all interviewees are described using the male gender.

Summary

This chapter discusses how data were collected and analysed using the survey and interview methods. The next three chapters discuss the empirical findings.

5 Survey Findings

Introduction

This chapter primarily focuses on the quantitative aspect of the study. It briefly explains the structure of the questionnaire, and reports the results of 43 responses from senior debt and equity financiers of PPP infrastructure investments. For illustrative purposes, a few quotations from the follow-up interviews are included.

The purpose of the questionnaire was to capture the perspectives of PPP financiers regarding the risks involved in PPP projects. Its emphasis was on the private sector.

More specifically the questionnaire attempted to answer two of the four research questions posed in chapter one:

- How do financiers perceive the risks associated with PPP projects?
- How do financiers manage the risks associated with PPP projects?

The questionnaire is divided into five sections, which this chapter replicates, as follows:

- Section one includes general information about the type of finance the respondents' companies provide, the extent of their involvement in PPP projects and sectors, and whether they have dedicated PPP units.
- Section two addresses attitudes to risk.
- Section three concentrates on cost of capital.
- Section four reports information about the financing criteria used.
- Section five examines the role of independent advisors/ consultants.

General information

Tables 5.1 to 5.7 provide information about the nature of investments made by the responding financiers. Although respondents were asked to indicate which type of finance they mainly provide in PPP, many respondents ticked both equity and subordinated debt. This is a function of the norm in the industry, as explained in chapter two, that equity is usually provided by way of very little pure equity and a majority of subordinated debt. Approximately one third of respondents mainly provide senior debt or bonds and a small number ticked both senior debt and bond finance.

Table 5.1 Type of finance mainly provided to PPP projects

Type of finance	**%**
Equity	76.7
Subordinated debt	67.4
Senior debt	27.9
Bond finance	7.0
Others	4.7
Total responses n =43	100.0
Mode	**Equity**

Of the respondents, who *mainly* provide debt, Table 5.2 shows that 57% indicated that they also hold an equity stake in all of the projects for which they provide debt. Approximately one fifth do not hold equity in any such projects.

Table 5.2 Equity stake held by debt providers in PPP projects

Equity stake held	%
Yes, in all of them	57.2
Yes, in most of them	0.0
Yes, in some of them	10.7
Yes, in a few of them	10.7
No, not in any of them	21.4
Total responses n=28	100.0
Mode	**Yes, in all**

One of the interviewees explained that such an alignment of the interests of the financiers in a project is beneficial:

> *One thing I have learned, for example in construction, is that and it makes a lot of sense that there can be a very different position when a construction contractor is actually just a sub-contractor and is not in that equity vehicle... if they are in the equity box then their interests are aligned and if they are not they can create issues.* (SD2)

While Table 5.3 shows that the precise values vary between equity and senior debt providers, in general terms respondents are most likely to have financed fewer than 10 projects in the last 10 years, with between 8% and 9% of respondents being very active in each of the equity and debt markets.

Table 5.3 Approximate number of PPP projects, based in the UK, to which the organisation provided finance in the last ten years

Number of PPP projects	Equity %	Debt %
Not applicable	2.6	15.6
Less than 10	57.9	43.7
Between 10 – 20	13.2	18.7
Between 21 – 30	10.5	6.3
Between 31 – 40	5.3	0.0
Between 41 – 50	2.6	6.3
More than 50	7.9	9.4
Total responses (n=38 equity, n=32 debt)	100.0	100.0
Mode	**Less than 10**	**Less than 10**

Table 5.4 shows the majority of financiers make a relatively small contribution to the total debt and equity in the SPV. Just over half of debt and equity investors invest less than 30% of the total debt and equity in the SPV. However, 30% of debt providers finance 90% or more of the total debt in the SPV.

Table 5.4 Average percentage of total equity and total debt finance provided to a SPV

Percentage of finance provided to an SPV	Total equity %	Total debt %
Not applicable	5.1	12.1
Less than 5%	23.1	18.2
5% to less than 10%	17.9	24.2
10% to less than 30%	12.8	9.1
30% to less than 50%	20.6	0.0
50% to less than 70%	12.8	3.0
70% to less than 90%	0.0	3.0
90% or more	7.7	30.4
Total responses (n=39 equity, n= 33 debt)	100.0	100.0
Mode	**Less than 5%**	**90% or more**

The majority of equity investors (59%) report in Table 5.5 that their intention is to remain with the project for over twenty years. However, a significant minority of debt and equity providers expect to finance projects for less than five years.

Table 5.5 Expected duration of financing a PPP project, on average

Duration of financing a PPP project	Equity %	Debt %
Not applicable	2.6	6.5
Less than 5 years	20.5	22.5
5 years to less than 10 years	10.3	12.9
10 years to less than 15 years	2.6	0.0
15 years to less than 20 years	5.1	9.7
20 years to less than 25 years	12.8	19.4
25 years to less than 30 years	38.4	29.0
30 years or more	7.7	0.0
Total responses (n=39 equity, n=31 debt)	100.0	100.0
Mode	**25 to less than 30**	**25 to less than 30**

Tables 5.6 and 5.7 show that schools are the most common sector to which respondents provide finance, and it is the most dominant sector for the 57% of respondents who indicate that they do have a primary investment sector. The top three preferences exhibited in Table 5.6 – schools, hospitals and roads – are also the three largest sectors in terms of total PPP capital expenditure, although the order of preference given in Table 5.6 is the reverse of expenditure.

Table 5.6 Number of respondents' companies reporting financing of PPP projects by sector

Sector	Number
Schools	27
Hospitals	25
Roads	20
Defence	18
Building schools for the future (BSF)	16
Prisons and prison services	16
Waste	14
Other transports such as railways	13
Water/sewage	11
Housing	10
Others	10
Mode	**Schools**

Other responses: care homes, libraries, police/civil justice/police offices, courts, fire stations, further education, government and local authority offices, street lights, student accommodation.

Fifty seven percent of 35 respondents indicate that their company finances projects in a primary sector. Table 5.7 indicates which these sectors are.

Table 5.7 Primary sector organisation is involved with

Primary sector	Number
Schools	8
Roads and rail	4
Health	2
Housing	2
Waste	2
Local authorities, HMRC, Gov offices	1
Police offices	1
Total responses	n=20

Chapter six examines risks in different sectors, since their importance may be sector specific. As one of the interviewees explained:

> *For schools, I think, the construction is the biggest risk. For prisons: I think the operation is the biggest risk because I think that there is a lot more to the operational side and the performance mechanisms and the things that you can't afford to get wrong, like letting prisoners out accidentally. There's an awful lot more to the operations than for a school. For roads, I would say the construction period. In Defence transactions, I would probably swing to the operations again, because, normally what you are building for an MOD, might be relatively straightforward but it's the operations of perhaps keeping technology refreshed etc. that might be the more challenging aspect.* (CE6)

Tables 5.8 to 5.11 provide information about how the investors organise and control their investments. Just short of two thirds of those who replied to this question indicate that their companies have dedicated PPP units, typically with a small number of employees.

Table 5.8 Dedicated unit for PPP finance

Dedicated unit for PPP	For equity finance %	For debt finance %
Yes	62.9	65.5
No	37.1	34.5
Total responses (n=35 equity finance, n=29 debt finance)	100.0	100.0

Table 5.9 Number of respondents indicating the size of their PPP unit in terms of numbers of employees

Size of PPP unit	Number equity	Number debt
Less than 10 employees	10	11
10 – 30	8	6
31 – 50	2	0
51 – 70	1	1
Total responses	n=21	n=18
Mode	**Less than 10**	**Less than 10**

A number of respondents cite commercial confidentiality as a reason for not answering the questions about performance measurement in Tables 5.10 and 5.11. Amongst the respondents to these questions, most report specific minimum performance criteria for equity units.

Table 5.10 Number of respondents indicating that minimum financial performance criteria are specified for the unit

Minimum financial performance criteria	Equity	Debt
Yes	16	10
No	5	7
Total responses	n=21	n=17
Mode	**Yes**	**Yes**

Respondents were asked to provide details of these minimum performance criteria. In relation to equity, responses include equity internal rate of return, profit/deal flow and return on equity. For debt, the responses include debt service cover ratios and return on subordinated debt. Table 5.11 has details of the key performance indicators for the units.

Table 5.11 Number of respondents indicating the primary indicators used to measure the performance of the PPP unit

Performance indicators	Equity	Debt
Profit	12	7
Revenue	1	4
Budgets	1	2
Market share	0	0
Others	8	4
Total responses	n=22	n=17
Mode	**Profit**	**Profit**

Profit is the primary performance indicator used in both equity and debt units. Interestingly market share is not noted as a response for either equity or debt units. There are a variety of other responses including – for equity units – internal rate of return, cash flows, portfolio value to internal rate of return, number of bids won and the investment value created. Debt service cover ratios and construction turnover are the two most common 'other' measures given for debt units.

Attitudes to risk in PPP projects

Tables 5.12 through to 5.25 summarise the responses about attitudes to risk, including the assessment and management of risk. Tables 5.12 to 5.14 report the perceptions of equity, senior debt and bond providers respectively about the importance of a range of factors when assessing risk. The very interesting outcome is that with very few exceptions all factors were considered to be either very important or important.

Table 5.12 Factors considered important when assessing risk in a PPP project – equity finance

Equity finance	% 1 and 2	% 3 and 4	N	Mean	Median	SD	Range
Risk transfer to subcontractors	97.1	2.9	35	1.26	1	0.505	4
Return on subordinated debt (or quasi equity)	91.4	8.6	35	1.54	1	0.675	4
Target return on equity	91.4	8.6	35	1.51	1	0.658	4
Availability of insurance on risks taken	85.7	14.3	35	1.83	2	0.822	4
Inflation on operating costs	77.1	22.9	35	1.94	2	0.873	4
Availability of insurance on all construction risks	74.3	25.7	35	2.09	2	0.887	4
Inflation on construction costs	58.8	41.2	35	2.49	2	0.887	4
Chance of changes in tax law	51.4	48.6	35	2.46	2	0.741	4
Contract term after debt is paid out	45.7	54.3	35	2.71	3	0.825	4

Key: 1 and 2 very important to important, 3 and 4 little importance to not important

All risks are regarded as very important or important by more than half the equity finance respondents apart from the 'contract term after debt is paid out'. Over 90% of respondents consider 'risk transfer to sub contractors', 'return on subordinated debt', and 'target return on equity' to be important. The importance of risks is examined further in chapter seven, however, an interviewee stressed that all risks are important because of the high costs of missing targets in PPP projects:

You do have the same uncertainties but the uncertainties actually hit you more in this, when they come to roost they really hit you badly. I have just finished a school, £30m just for one school, we finished it a day late, it was due to be finished on a Saturday and it was finished on Sunday, it was opened for the teachers on the Monday but we still have to charge the builder for one day of lost rent and so normally you would turn round and say well what a good job he has done and let's just forget about that but it is going to cost him nearly £11,000 for being one day late. (E1)

Table 5.13 shows that senior debt providers also consider virtually all factors as very important or important when assessing risk. 'Availability of swaps to mitigate interest rate risks' and 'risk transfer to subcontractors' are noted by 100% and 96.9% of respondents respectively. The only factor rated as not important or as having little importance by a majority of respondents is 'availability of bonds to mitigate interest rate risks'.

Table 5.13 Factors considered important when assessing risk – senior debt

Senior debt finance	% 1 and 2	% 3 and 4	N	Mean	Median	SD	Range
Availability of swaps to mitigate interest rate risks	100.0	0.0	34	1.41	1	0.988	4
Risk transfer to subcontractors	96.9	3.1	33	1.36	1	0.895	4
Availability of insurance	90.9	9.1	34	1.59	1	0.957	4
Interest margins on cost of debt (LIBOR)	90.9	9.1	34	1.74	2	0.864	4
Cover ratios (E.g. Loan life cover, debt service cover, interest cover)	90.9	9.1	34	1.59	1	0.892	4
Technical due diligence on financial model	87.9	12.1	34	1.76	2	0.890	4
Availability of insurance on all construction risks	84.8	15.2	34	1.85	2	1.019	4
Availability of insurance on all operating and maintenance risks	84.8	15.2	34	1.79	2	0.978	4
Inflation on operating costs	78.8	21.2	34	1.97	2	0.969	4
Contract term after debt is paid out	75.8	24.2	34	2.15	2	0.958	4
Chance of changes in tax law	65.6	34.4	33	2.36	2	0.822	4
Inflation on construction costs	58.8	41.2	34	2.29	2	0.970	4
Availability of bonds to mitigate interest rate risks	41.7	58.3	32	3.19	3	1.335	4

Key: 1 and 2 very important to important, 3 and 4 little importance to not important

The risk of changes in the law is likely to be sector specific:

> *Government legislation, change in law again, that can be quite a big risk depending upon what sector you are in. Particularly in the waste sector where you are seeing many legislative changes and let's face it, there could be one in the prison sector if a law was passed saying that, all prisoners in the future must have their own cell. That would be quite a big change to a contract... Now again that is a risk that the private sector would see passing back to the public sector, but there is still always a debate to be had.* (SD2)

However, tax changes may not be important because:

> *There are usually clauses in the contract that if it is a discriminatory specific tax then the council would pay us extra anyway.* (E1)

Table 5.14 Factors considered important when assessing risk in a PPP project – bond finance

Bond finance	% 1 and 2	% 3 and 4	N	Mean	Median	SD	Range
Margins on cost of debt (GILTS)	94.1	5.9	23	2.36	2	1.560	4
Availability of insurance	88.9	11.1	23	2.26	2	1.602	4
Risk transfer to subcontractors	88.9	11.1	23	2.22	1	1.622	4
Bond rating	88.9	11.1	23	2.22	1	1.622	4
Availability of insurance on all construction risks	88.9	11.1	23	2.43	2	1.502	4
Technical due diligence on financial model	88.9	11.1	23	2.48	2	1.473	4
Availability of insurance on all operating and maintenance risks	83.3	16.7	23	2.39	2	1.599	4
Inflation on operating costs	77.8	22.2	23	2.57	2	1.472	4
Contract term after debt is paid out	72.2	27.8	23	2.74	2	1.356	4
Availability of swaps to mitigate interest rate risks	66.7	33.3	23	3.04	3	1.718	4
Inflation on construction costs	61.1	38.9	23	2.87	3	1.290	4
Chance of changes in tax law	61.1	38.9	23	2.87	3	1.290	4
Breakage costs of swaps	52.9	47.1	23	3.09	3	1.474	4
Involvement multinationals	33.3	66.7	23	3.26	3	1.176	4

Key: 1 and 2 very important to important, 3 and 4 little importance to not important

With one exception of bond finance respondents, all answers are regarded as very important or important by the majority. 'Margins on cost of debt' was the most common response. Other common responses include 'availability of insurance', 'risk transfer to subcontractors', 'bond rating', 'availability of insurance on all construction risks' and 'technical due diligence on financial model'. The exception which is rated as important by less than half the respondents was the 'involvement of multinationals'.

Tables 5.15 to 5.17 show the importance attributed to allocating a range of risks to subcontractors and/or insuring the risks, for design and development, operations, and ownership risks respectively. Again the majority of respondents perceive these risk mitigation measures as important for all risks listed in the questionnaire.

Table 5.15 Importance that the following risks are allocated to subcontractors and/or fully insured – design and development

Design and development	% 1 and 2	% 3 and 4	N	Mean	Median	SD	Range
Fitness for purpose of the projects design	100.0	0.0	42	1.33	1	0.721	4
Delivery of design of construction projects	100.0	0.0	42	1.26	1	0.445	4
Planning problems	97.6	2.4	42	1.38	1	0.764	4
Construction costs overrun	97.6	2.4	42	1.17	1	0.437	4
Planning approvals	97.6	2.4	42	1.43	1	0.770	4
Late delivery of detailed design	97.6	2.4	42	1.31	1	0.517	4
Delivery schedule	95.2	4.8	42	1.33	1	0.570	4
Independent certification	95.0	5.0	42	1.76	2	0.932	4
Availability of construction assets to site	92.7	7.3	42	1.49	1	0.637	4
Disruption to existing services	90.2	9.8	42	1.63	2	0.662	4
Site preparation	88.1	11.9	42	1.57	1	0.703	4
Environmental issues	83.3	16.7	42	1.60	1	0.767	4
Design and construction variations by the SPV	83.3	16.7	42	2.29	2	1.402	4
Archaeological issues	78.6	21.4	42	1.72	1	0.864	4
Industrial disputes	69.0	31.0	42	1.86	1.5	0.977	4

Key: 1 and 2 very important to important, 3 and 4 little importance to not important

Fewer respondents identified industrial disputes as important compared to the other risks, but even so almost 70% of respondents perceive that this risk should be allocated to subcontractors or insured.

Table 5.16 Importance that the following risks are allocated to subcontractors and/or fully insured – operations

Operation	% 1 and 2	% 3 and 4	N	Mean	Median	SD	Range
Asset/service performance	100.0	0.0	42	1.26	1	0.445	4
Asset/service availability	100.0	0.0	42	1.19	1	0.397	4
TUPE (Transfer of Undertakings Protection of Employment)	92.9	7.1	42	1.43	1	0.703	4
Security	90.5	9.5	42	1.64	2	0.656	4
Change to public sector partner requirements	87.2	12.8	42	2.05	2	1.081	4
Cost of keeping latent defects in existing assets	85.0	15.0	42	1.83	1.5	1.102	4
Staff training	83.3	16.7	42	1.86	2	0.683	4
Repairs and maintenance cost variations	83.3	16.7	42	1.71	1.5	0.864	4
Latent defects in existing assets	82.9	17.1	42	1.74	1	1.061	4
Changes in demand	72.2	27.8	42	2.39	2	1.358	4
Third-party revenue	65.8	34.2	41	2.46	2	1.120	4

Key: 1 and 2 very important to important, 3 and 4 little importance to not important

Within operations, 'changes in demand' and 'third party revenue' are noted most frequently as the risks it is least important to allocate to subcontractors or to insure. Demand changes, other than in roads projects, are generally held by the public authority, which probably explains why this risk is one of the least important.

At interview another significant risk is reported by some financiers. This is the life cycle risk which remains with the private sector over the long term, and may affect the risk profile of the project in the future:

> *The private sector has priced what it thinks the fabric of that building will require, how much money it will require to keep it running at a standard that has been agreed with the public sector. It may say there should be no scratches on that wall, that carpet should not show wear and tear and they are pricing that on day one. So if you take the very first transactions and we are only ten years into thirty years, only now are we able to see if there has been enough put aside to pay for those repairs and renewals and that risk is definitely a private sector risk. We can't go back to the public sector and say, sorry we have under priced our lifecycle, can we have some money? The answer will be no. So do I see the risk profile changing? If I do it will probably be through that lifecycle.* (SD2)

Table 5.17 Importance that the following risks are allocated to subcontractors and/or fully insured – ownership

Ownership	% 1 and 2	% 3 and 4	N	Mean	Median	SD	Range
Uninsurable loss or damage to the assets	89.5	10.5	42	1.88	1	1.253	4
Public/third-party liabilities	85.4	14.6	42	1.81	2	0.969	4
Government legislation/ regulation changes	85.0	15.0	42	2.02	2	0.975	4
Reputational	82.5	17.5	42	1.88	2	1.064	4
Technology change or obsolescence	76.3	23.7	42	2.29	2	1.195	4
Force majeure	64.9	35.1	42	2.52	2	1.254	4
Realisation of the residual value of assets	62.2	37.8	42	2.50	2	1.366	4

Key: 1 and 2 very important to important, 3 and 4 little importance to not important

Within ownership, consistent with the previous pattern the responses illustrate that all risks are ranked as important or very important. Although the majority of respondents perceive it is important to allocate or insure 'realisation of the residual value of assets' and 'force majeure' risks, over a third believe this is of little importance.

Tables 5.18 to 5.20 show the overall importance of four major risk categories during three phases of PPP projects.

Table 5.18 Overall importance of risks – pre-financial close phase (%)

Risks	Pre-financial close					
	Most important	Important	Less important	Least important	Mode	Total responses
Design and development	66.7	25.6	7.7	0.0	Very important	39
Finance	35.9	43.6	15.4	5.1	Important	39
Operation	10.3	15.4	43.6	30.8	Less important	39
Ownership	5.4	10.8	27.0	56.7	Least important	37

During the *pre-financial* close phase, on a scale from most important to least important the risks are: design and development; finance; operation; and then ownership. This pattern is repeated in the construction of infrastructure phase, although there are variations in the strength of perceptions. During construction almost 80% perceive design and development as most significant.

Table 5.19 Overall importance of risks – during construction of infrastructure (%)

Risks	During construction of infrastructure					
	Most important	Important	Less important	Least important	Mode	Total responses
Design and development	79.5	17.9	2.6	0.0	Very important	39
Finance	25.6	46.2	23.1	5.1	Important	39
Operation	5.3	28.9	42.1	23.7	Less important	38
Ownership	2.8	13.9	25.0	58.3	Least important	36

However, Table 5.20 shows a different pattern after construction is complete.

Table 5.20 Overall importance of risks – operational phase (%)

Risks	Operational phase					
	Most important	Important	Less important	Least important	Mode	Total responses
Operation	90.0	7.5	2.5	0.0	Very important	40
Finance	12.5	55.0	32.5	0.0	Important	40
Ownership	7.9	28.9	28.9	34.2	Least important	37
Design and development	0.0	12.5	35.0	52.5	Least important	40

During the *operational* phase, the order of importance is: operation; finance; ownership; and then design and development. As expected, operation has attracted a huge response at the 'most important' level.

It is interesting to note that finance risk is the second most important risk category in each of these three phases of PPP contracts.

One risk related issue that did not feature in the questionnaire but emerges later in a follow-up interview is the risk associated with a breakdown in personal relationships:

> *I had to go to the public sector body last week and have a very long conversation with their senior guy in which I said, and he got upset, the reason that I am here is to get some common sense into the process because it was being obscured by personality issues.* (SD8)

Ultimately the legal documents and possibly arbitration are used to resolve conflict between parties in PPP contracts, but a number of interviewees speak of the importance of trust in conflict resolution. If trust

does not exist, the danger is that people take a literal interpretation of the contract. However, with trust a resolution may be achieved:

> *So the suggestion is that this project is going to cost more money than we thought it should, because the survey didn't pick up X, so therefore you are going to have to pay for that authority and they (the procurers) are saying no that's your risk... so it's the trust thing.* (CE7)

Table 5.21 identifies the numbers of respondents reporting their use of various methods to limit risk in the past five years:

Table 5.21 Methods organisation used to limit risk in PPP over the past 5 years

Methods of limiting risk	Pre-operation	Post-operation
Transferring risk to subcontractors	39	25
Insurance	31	35
Spreading risks through syndication	18	11
Transferring risk to public sector	18	8
Spreading risks through a portfolio of projects	17	21
Contract renegotiation	7	6
Securitisation	6	8
Sale before contract period expires	4	18
Others: hedging	1	1
Total responses	n=43	n=43
Mode	**Transferring risk to sub-contractors**	**Insurance**

During the *pre-operation* stage, 'transferring risk to subcontractors', and 'insurance' are the most popular methods used to limit risk by 39 and 31 of the 43 respondents respectively. During the post-operation stage, the same two methods are most commonly used although more respondents cite 'insurance' than 'transferring risk to subcontractors' in this stage. 'Contract renegotiation' and 'securitisation' are not commonly used in either stage.

Although insurance is a common means of mitigating risks, at interview concerns were raised that some risks can not be fully insured. The following example relates to the difficulty of extending a normal schools' insurance policy to cover visiting pupils:

> *They (insurance companies) are willing to provide insurance generally, but its extensions that's the problem. For example, cover for international students in schools may not be available – they may not be prepared to cover that risk... you are basically not insured.* (CE7)

For the small number who did use securitisation, the reasons are shown in Table 5.22.

Table 5.22 Reasons for securitising PPP projects

Reasons	**Number**
To realise capital for reinvestment	4
Increase liquidity	3
Private partner request	3
Increase profitability	2
Reduce interest charges	1
Reduce risk exposure	1
Smoothing of returns	1
Total responses	n=8
Mode	**To realise capital for reinvestment**

The extent of and the reasons for refinancing and equity sales of PPPs are shown in Tables 5.23 and 5.24 respectively.

Table 5.23 Percentage of PPP projects refinanced and/or sold on in the last 5 years

Refinanced or sold on	Refinanced (%)	Sold on (%)
None	22.2	19.3
1% to less than 10%	30.5	22.1
10% to less than 20%	11.1	16.7
20% to less than 30%	13.9	5.6
30% to less than 40%	11.1	2.8
40% to less than 50%	0.0	5.6
50% to less than 60%	0.0	2.8
60% to less than 70%	0.0	2.8
70% to less than 80%	5.6	5.6
80% to less than 90%	0.0	0.0
90% to 100%	5.6	16.7
Total (n=36 refinanced & sold on)	100.0	100.0
Mode	**1% to less than 10%**	**1% to less than 10%**

The data reveal that more than half the respondents have refinanced less than 10% and sold on less that 20% of their PPP projects. Interestingly however, a small number of organisations have refinanced and sold on the vast majority of their projects. It is also noteworthy that while only some 11% have refinanced more than 50% of projects some 28% have sold on more than half.

Table 5.24 Reasons for refinancing or selling on your equity in PPP projects

Reasons	Total	Number refinanced	Number sold on
Increase your return	29	18	11
Increase your liquidity	24	7	17
To take advantage of lower borrowing costs	14	14	0
Other private sector partner request	12	5	7
To manage your risk portfolio	11	3	8
To lower risk profile of project being refinanced	4	3	1
Smoothing of returns	3	2	1
Public sector partner request	2	1	1
As a result of contract renegotiations	2	2	0
Others	3	0	3
Total responses	n=36	n=36	n=36
Mode		**Increase return**	**Increase liquidity**

At the time the questionnaires were received, the primary reasons for refinancing projects are to 'increase return' and 'to take advantage of lower borrowing costs'. The primary reasons for selling equity are to 'increase liquidity' and 'increase return'.

However, an interviewee indicates that in the current credit crunch market conditions, there is not much opportunity to refinance projects and the cost of refinancing is also expensive:

> *I have to say that the competitive pressure of these transactions from a financing point of view on pricing means that they have already been priced very, very finely. And I do not see a huge opportunity to refinance in the future. Take my school's example at 60 basis points, where do you go from there? I guess there is not much margin for refinancing. The cost of refinancing is an expensive exercise, with lawyers involved, with running financial models, and the question is, is it worthwhile for the private sector and the public sector, doing a refinance on a project by project basis.* (SD2)

Finally, in this section of the questionnaire examining attitudes to risk, respondents are asked to agree or disagree with a series of statements, which are summarised in Table 5.25.

Table 5.25 Attitudes to risk

Panel A - Statements with which the majority agree								
Statements	**% agree**	**Neutral**	**% disagree**	**N**	**Mean**	**Median**	**SD**	**Range**
Over the last four years the amount of risk transferred from the public sector to the private sector has increased.	80.4	9.8	9.8	41	3.88	4	0.812	5
Most projects would not go ahead without a direct agreement between the senior debt holders and the government.	75.0	2.5	22.5	41	3.80	4	1.400	5
When entering into a PPP project we intend to see the project through until the end of the contact.	67.5	15.0	17.5	41	3.80	4	1.269	5

Table 5.25 Attitudes to risk (Cont.)

Panel B - Statements with which the majority do not agree								
Statements	**% agree**	**Neutral**	**% disagree**	**N**	**Mean**	**Median**	**SD**	**Range**
We prefer to renegotiate the terms of the standard PPP contract.	37.9	29.7	32.4	39	3.21	3	1.196	5
Most projects would not go ahead without an implicit guarantee by the government.	35.9	28.2	35.9	39	3.10	3	1.294	5
Most projects would not go ahead without an explicit guarantee by the government.	28.2	20.5	51.3	40	2.80	2.5	1.265	5
The transfer of risks is not always agreed upon until after the PPP contract has been awarded.	26.8	4.9	68.3	41	2.32	2	1.213	5
Once the construction phase has ended a PPP project is a very low risk.	24.4	24.4	51.2	41	2.71	2	0.955	5
It is possible to transfer some of the risks of a PPP back to the public sector after a project is negotiated	22.5	7.5	70.0	40	2.20	2	1.137	5
We securitise most of our PPP projects	12.5	25.0	62.5	41	2.98	3	1.877	5
It is often unclear who bears what risks in a PPP project.	2.4	7.3	90.3	41	1.88	2	0.640	5

Key: Agree refers to agree and strongly agree, Disagree refers to disagree and strongly disagree

A significant majority of the respondents perceive that they are clear about where risk lies in PPP projects, that they have not overestimated risks historically, and that in recent times risk transfer from the public to the private sector has increased.

While the majority of respondents believe that risks are not negotiated or passed back to the public sector after the contract has been awarded, it is interesting that about one quarter of respondents perceive some flexibility in these areas.

Two other issues of note will be examined further in chapter seven: the importance of a direct agreement between the senior debt holders and the procurer, noted by 75% of the respondents; and the intention of 67% to stay with the project.

Cost of capital

Tables 5.26 and 5.27 report information about targets for internal rate of return for equity investors and margins on debt, but response rates are lower than on many other questions.

Table 5.26 Target internal rate of return (IRR) in the last financial year for equity finance

Target IRR	**%**
Less than 6%	0.0
6% to less than 9%	10.3
9% to less than 12%	24.1
12% to less than 15%	51.8
15% to less than 18%	6.9
18% or more	6.9
Total responses (n=29)	100.0
Mode	**12% to less than 15%**

Overall the results indicate that approximately three quarters of those who replied are reporting target internal rates of return at between 9 and 15%.

Table 5.27 Average margin over LIBOR for debt, or spread over GILTS for bonds

Margin over LIBOR, spread over GILTS	**%**
Less than 20 basis points	4.2
20 basis points to less than 40 basis points	4.2
40 basis points to less than 60 basis points	8.3
60 basis points to less than 80 basis points	25.0
80 basis points to less than 100 basis points	41.6
100 basis points or more	16.7
Total (n=24)	100.0
Mode	**80 < 100 basis points**

At the time of these responses about two thirds of those who chose to respond were reporting margins between 60 and 100 basis points, but at the later interviews as the credit crunch takes greater effect, respondents are reporting a range between 200 and 250 basis points on LIBOR.

However, at interview when asked to discuss expected rates of return, a typical response is that it is project specific:

> *I wouldn't want to comment on that to be honest that is very project specific. I would say that you would expect a lower rate of return for that simple schools deal transaction that I was talking about to what might be a prison transaction where you are taking more operating risk. Within a certain margin there is some movement but it is not huge in PPP terms.* (SD2)

Financing criteria

Table 5.28 shows agreement or disagreement with statements about the decision to finance a PPP project.

Table 5.28 Factors that influence the decision to participate in a PPP project

Factors	% agree	Neutral	% disagree	N	Mean	Median	SD	Range
Familiarity with this industry	92.9	7.1	0.0	42	4.36	4	0.618	5
Considered to be profitable	90.7	7.0	2.3	43	4.21	4	0.675	5
We have engaged in a similar project before	90.5	9.5	0.0	42	4.24	4	0.617	5
Working with consortium members we have already worked with before	88.1	9.5	2.4	42	4.19	4	0.707	5
Invitation by a consortium member	80.5	12.2	7.3	41	3.85	4	0.727	5
Preference for certain geographic regions	74.4	20.9	4.7	43	3.86	4	0.743	5
Ability to trade in the equity or bond of our investments	48.7	28.2	23.1	42	3.48	4	1.215	5
A relatively small amount of private sector risks involved compared with our previous contracts	42.8	31.0	26.2	42	3.24	3	1.144	5
Decline in the number of available new PPP projects	35.7	38.1	26.2	42	3.02	3	1.000	5

Key: Agree refers to agree and strongly agree, Disagree refers to strongly disagree and disagree

Reasons for choosing to finance a project include perceptions about profitability, organisational competence in terms of familiarity with the project type, the industry and a geographical region, and knowledge of consortium members. The findings are mixed in terms of the impact of a decline in project pipeline on participation. Ability to exit the industry is an influence for just less than half the respondents.

Respondents were also asked to provide unprompted information about the factors that influence decisions to invest in a PPP project. The lists provided are extensive but there were some commonalities as follows:

Financial criteria:

- Internal rate of return (IRR) in particular relating to equity.
- Return on equity.
- Equity payback period.
- Availability of debt finance.
- Financially strong subcontractors with healthy balance sheets.

Non-financial criteria:

- Reputation.
- Familiarity with industry and client relationships.
- Risk transfer to sub-contractors.
- Quality of and familiarity with the contractor.
- Availability of insurance for non-transferred risks.
- Good track records and prior experience of all parties involved in a project.
- Extent of standardisation in the contract.
- Compensation on termination.

The role of private agents/consultants

The fifth and final section of the questionnaire examines the use of advisors and consultants, and the findings are shown in Tables 5.29 to 5.33.

Table 5.29 Extent of dependence on advice from third party advisors

Dependence on advisors	% agree	Neutral	% disagree	N	Mean	Median	SD	Range
Independent legal advisors	92.8	4.8	2.4	42	4.57	5.0	0.801	5
Independent insurance advisors	83.4	9.5	7.1	42	4.24	4.5	0.983	5
Independent technical advisors	78.6	11.9	9.5	29	4.05	4.0	1.001	5
Independent financial advisors	73.2	14.6	12.2	41	3.98	4.0	1.151	5
Others	80.0	0.0	20.0	6	4.33	5.0	1.751	5

Key: Agree refers to agree and strongly agree, Disagree refers to disagree and strongly disagree

The majority agree that they are dependent on each of the four categories of advisor listed, but this is especially true of legal advice. About one quarter do not agree that they depend on financial advisors. In the others category, advice on project lifecycle costs and the relationship between revenue and traffic volume are noted.

For each of four categories, respondents are asked to itemise two of the most significant due diligence items that advisors monitor on their behalf. Unprompted common responses are shown in Table 5.30.

Table 5.30 The most significant due diligence items third party advisors monitor

Financial	Insurance
Integrity and sensitivity analysis of the financial model or model audit	Completeness and continuing availability of insurance cover
Cover ratios	Uninsurable risks
Equity return	Risks shared with the public sector
Funding structure	Indemnities
Legal and contractual	**Technical**
Passing risks through to subcontractors	Adequacy of costs and prices
Legal compliance and documentation	Appropriate identification and allocation of technical risks
Facilities management contracts	Design and quality of materials
Termination provisions	Adequacy of lifecycle provisions
TUPE	
Indemnities	

Responses to the legal and contractual and technical categories were especially varied. Table 5.31 shows that advisors are perceived to be more expert than, and fill gaps in, the financiers' in-house capabilities.

Table 5.31 Reasons for employing independent third party advisors in PPP contracts (by number of respondents)

Reasons	Number
They have more expertise than our company	33
We do not have in-house expertise in that area	31
To provide independent advice	28
To transfer the risks to them	8
To mitigate our reputational risk if things go wrong	7
To keep the bidding costs down as we only pay them on successful bids	5
To provide cheaper advice than in-house	2
Others	1
Mode	**They have more expertise than our company**

As one interviewee explains:

> *At the end of the day bankers are bankers, we know our limits in terms of trying to provide finance. I'm not the best man to tell you how much it would cost you to provide cleaning services to a school for 25 years, you know. Or how much it would cost to repair or keep a school roof whole over the life of 25 years or what the life cycle budget should be in relation to that. So you definitely do rely a lot. Well I'd go as far to say you couldn't do one of these (PPP projects) without external advice.* (CE6)

Deviation from the financial model, whether monitored in-house or independently, is likely to trigger action as Table 5.32 shows.

Table 5.32 Point of involvement at levels of deviations of operating performance from the financial model (%)

Point of involvement	%
At less than 5% deviation from the financial model	39.5
Between 5% to 10% deviation from the financial model	44.7
Between 10 to 15% deviation from the financial model	7.9
Between 15% to 20% deviation from the financial model	2.6
After the award of penalty points or payment abatements by the public authority	5.3
Total (n=38)	100.0
Mode	**Between 5% to 10% deviation**

The table shows that relatively tight control is maintained over projects, as deviation from the financial model by less than 10% will trigger intervention by over 80% of respondents' companies. It is noteworthy that only a small percentage of respondents identify the award of penalty points as a trigger for action.

The final question asks respondents to agree or disagree with two statements about their advisors, as shown in Table 5.33.

Table 5.33 Agreement or disagreement with statements about advisors

Statements	% agree	Neutral	% disagree	N	Mean	Median	SD	Range
The advisors' reports are useful in managing/ mitigating operating risks in PPP	80.0	15.0	5.0	40	3.90	4	0.709	5
Costs of monitoring PPP by third party private agents have increased	52.6	39.5	7.9	40	3.68	4	0.944	5

Key: Agree refers to agree and strongly agree, Disagree refers to disagree and strongly disagree

Eighty percent agree that advisors' reports are useful in managing/ mitigating operating risks in PPP. Over half also agree that costs of monitoring are increasing, but a significant proportion record a neutral response to this proposition.

Summary

This chapter reports the findings from 43 respondents to the questionnaire, most of whom invest equity and subordinated debt, and about a third of whom provide senior debt or bonds. Their general characteristics may be summarised as follows:

- Typically they finance relatively small numbers of projects, and hold less than 30% of the total equity or debt in the SPV.
- About 60% of equity investors and 48% of debt providers expect to finance a PPP for more than 20 years, but about one fifth expect to finance projects for less than five years.

- Two thirds operate specialist PPP units and assess their performance on profitability, but many were reluctant to report performance indicators.

A wide range of factors are classed as very important or important by all financiers when assessing risks. Attitudes to risk may be summarised as follows:

- The majority report that most design and development, operations and ownership risks listed in the questionnaire should be allocated to subcontractors or insured.
- The importance of risk factors varies depending on the stage of the PPP project. Design and development is most important pre-financial close and during the construction phase. Unsurprisingly, operations risks are of most importance after construction is complete.
- Respondents state they have a clear idea of who bears risk in PPP projects.
- Respondents perceive that more risk has been transferred from the public to the private sector in the last four years.
- About one quarter of respondents perceive it is possible to transfer risks back to the public sector after the project is negotiated or that risk transfer may not be agreed until after the contract is awarded.

Refinancing and equity sales are generally reported as not very common but are undertaken mainly to increase return on investment or liquidity. However, only 67% agree that they intend to stay with a PPP project until the end of the contract. In the last five years some 28% of respondents report selling more than half their projects, compared to just 11%, who have refinanced more than half. Essentially, PPP deals need the direct agreement between the senior debt holder and the procurer to proceed, and contractor performance that deviates from the financial model by less than 10% triggers intervention by financiers.

The most commonly used financial decision criteria include return on investment, return on equity and payback period. Commonly used non-financial decision criteria include impacts on reputation, and familiarity with the industry, the project type and the consortium members. Respondents depend upon a range of independent advisors, whose reports they perceive to be useful in managing risk, but just over half the respondents believe the costs of third party monitoring by advisors has increased.

The next chapter introduces the case studies and examines risk mainly from the perspective of the public sector PPP partners.

6 The Case Studies: Illustrating Public Sector Perceptions About Risk

Introduction

Drawing on interview based evidence, this chapter addresses the fourth research question posed in chapter one: how do the financiers' perceptions of risks differ from those of their public sector partners?

The focus is on specific case studies of PPPs in five sectors: transport, health, education, housing and prisons. The first three have been chosen as these are the three largest sectors in terms of capital expenditure. The cases include a road and two schools projects in Northern Ireland, and a hospital project in Scotland. Studies of an English housing case and a Scottish prison offer the opportunity to investigate two sectors that have attracted little attention either in the public domain or in the literature on PPP. Table 6.1 shows the values of signed PPP deals in the UK as at November 2008.

Table 6.1 Signed PPP deals as at November 2008 by sector

Sector	£m	%
Transport	23,448.88	37
Health	12,129.29	19
Education	9,055.48	15
Defence	8,725.33	14
Other	9,447.05	15
Total	62,806.04	100

Source: HM Treasury (2008), PFI statistics, compiled from http://www.hm-treasury.gov.uk/ppp_ppp_stats.htm, accessed 20th April 2009.

This chapter:

- Provides some background information on each of the five chosen sectors.
- Describes each of the cases, and presents the structure of the companies and the legal contracts involved in the PPP.
- Identifies three commonalities about perceptions of risks amongst public sector interviewees across the five sectors relating to: demand risk; flexibility and affordability; and the impacts of risk on service users.

Sectoral background and the case studies

This section presents some background information about each of the five sectors and the case studies.

Background to the roads sector

As Table 6.1 shows, transport is the largest spending department with £23.4bn signed deals, which represents about 37% of total PPP capital expenditure since the policy's inception. By way of context, this total capital expenditure, as Table 6.2 shows, is broadly equivalent to current annual transport spending estimates.

Table 6.2 UK transport spending*

£Billion			
Estimate (£ bn)		**Projections (£ bn)**	
2007-8	2008-9	2009-10	2010-11
20.0	21.9	22.5	23.7

*UK transport measured with international definitions from the UN classifications of the functions of government (COFOG).

Source: HM Treasury http://www.hm-treasury.gov.uk/d/pbr_csr07_completereport_1546.pdf, accessed 20th April 2009.

Within transport, as of November 2008, the total value of signed projects in the roads sector was £2.9bn (HM Treasury, 2008). These are largely design, build, finance and operate (DBFO) contracts.

The early road schemes were paid for by shadow tolls, a system designed by the then government's advisors, Price Waterhouse, to allay the private sector's fears that direct tolls would arouse political opposition, thereby endangering the policy of creating a private road-operating industry (Glaister *et al.*, 1998). In these early schemes the payment mechanism was a volume based shadow toll, paid by government rather than the motorist. But more recent schemes also include payments based upon road availability, performance, safety and congestion management.

The roads case study project forms part of Northern Ireland's scheduled £20 billion investment strategy for 2008-2018. The Strategic Investment Board (SIB) intends this investment to be a sustainable programme of capital investment in transport, education, health, housing and water over the next 10 years (Strategic Investment Board, 2008).

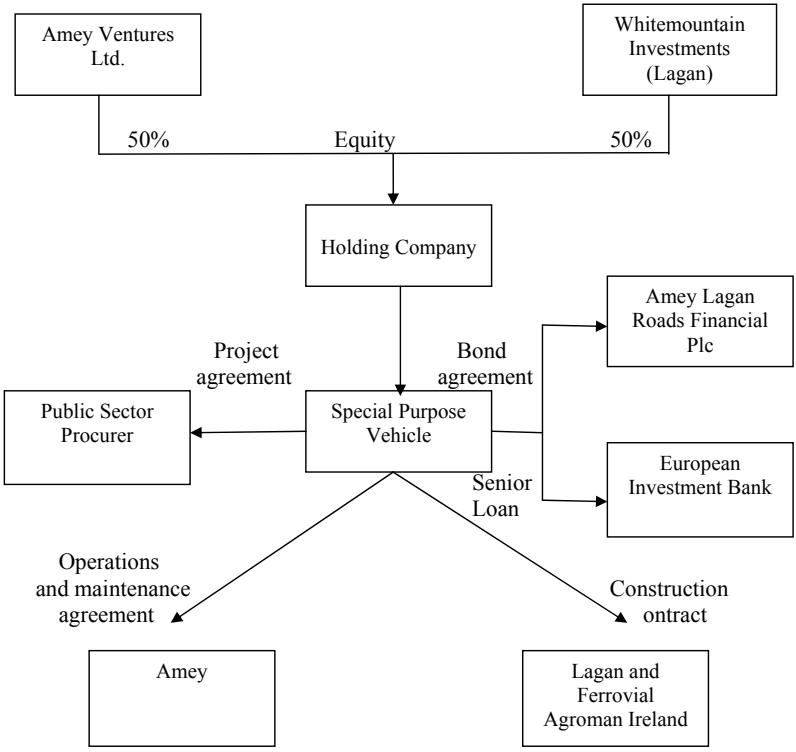
There are two DBFO packages in Northern Ireland:

Package 1 – this includes: the maintenance of 44 km of motorway and capital works with an estimated overall value of £118m; and the maintenance of 117km of motorway and dual carriageway and capital works with an estimated construction value of £225m (HM Treasury, 2008). The improvements have been identified as key to fulfilling the Department for Regional Development Roads Service's Regional Transportation Strategy. When completed, the projects are intended to ease traffic problems at key locations and provide significant enhancements to the Strategic Transport Network as a whole. Furthermore, project objectives include increasing the prospects for economic growth in the region, and providing benefits in reductions in delays, congestion, pollution and accidents, for both road users and non-road users.

Package 2 – this is worth £225m and is for the design, build, finance and operation of five separate schemes, which involve: new build of a link road, a road extension and new dual carriageway; improvements to existing single

carriageways and motorway bridges; and the installation of motorway communications equipment (HM Treasury, 2008). The Northern Ireland Road Services Agency maintains close contact with its counterpart in England – the Highways Agency – and uses its standard form of contract, rather than that developed by the SIB, as it was deemed more relevant to the sector. In roads projects, the whole service is provided by the private sector, unlike schools and hospitals where core services are retained by the public sector. Figure 6.1 shows the structure of the project in terms of the contracting parties.

Figure 6.1 The roads case



The Amey Lagan Ferrovial Agroman (ALF) consortium was appointed as provisional preferred bidder for the project in December 2006, and reached financial close in December 2007. The contract period is due to run to March 2011. The parent organisation Ferrovial, one of the largest contracting companies in Spain, specialises in integrated infrastructure management. Amey Ventures, which is predominantly UK based, heads up the group's UK PPP projects, and states that it exists to deliver and improve services to the public by supporting both public and private organisations (Amey, 2009). Whitemountain Investments is part of the Lagan group, which describes itself as one of the largest building materials, engineering and construction groups in Ireland (Lagan, 2009). Within the consortium, the construction work will be undertaken by a joint venture between Ferrovial Agroman Ireland and Lagan Construction. Amey will be responsible for operations and maintenance.

The project was financed primarily through bond finance. The total bond amounted to £146,423,000 and has an interest rate of 2.267% which is index linked (Ambac, 2007; Ashurst, 2007). Ambac Assurance is the financial guarantor, and Société Générale and RBC Capital Markets were joint lead managers. The European Investment Bank has provided a senior loan of £121,055,000, and SMBC Equity has provided a mezzanine loan of £17,549,514 (Ambac, 2007; Ashurst, 2007). A unitary payment of £29m is expected to be made for the first time in the period 2011/2012 (HM Treasury, 2008).

In relation to the following cases, it is possible to identify a number of organisations that provide advice to each of the public and private sector partners from the Partnerships UK database. However, this database does not include any such information about the first case study above.

Background to the hospitals sector

Health is the second largest PPP spending department with £12.1 billion signed deals, representing about 19% of total PPP capital expenditure since the policy's inception.

Before 1997, effectively all NHS investment was financed by government borrowing, which was subject to an annual cash limit.

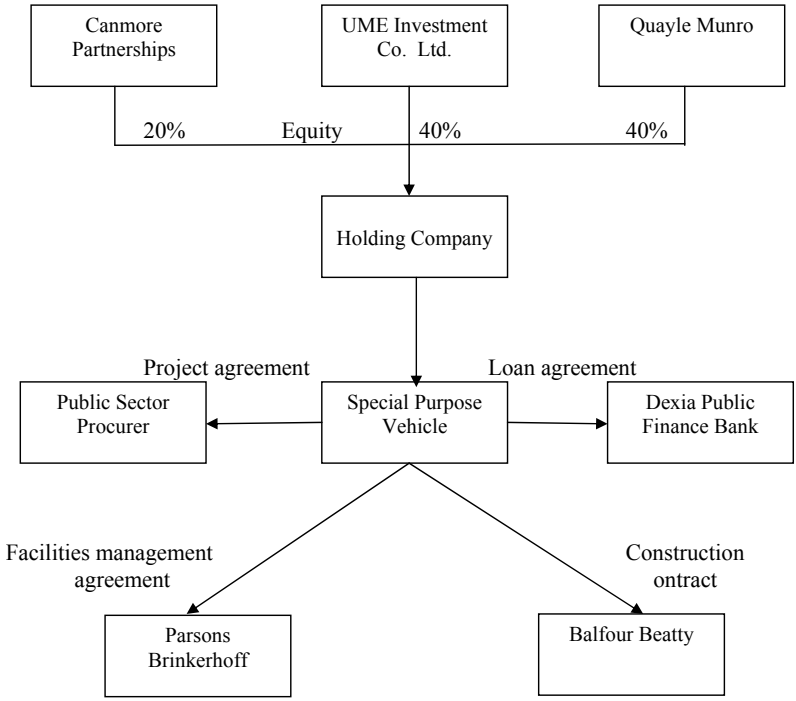
Thereafter, cash limits do not apply if investment is financed by the private sector, creating a strong incentive for NHS managers to seek PPP finance (Sussex, 2003). Since 1997, publicly financed investment has been mostly devoted to small schemes, including refurbishments, whereas PPP is concentrated on larger, new-build investments (Sussex, 2003). NHS PPP deals cover only the building and non-clinical services, not core activities. The public sector retains demand risk.

Our case study is located in Scotland, where there are two important differences compared to the rest of the UK. Firstly, health expenditure per person in Scotland is significantly more generous than the average for the UK, for example, it outstrips England by some 20% per person, so that Scotland is described as enjoying European levels of health funding (Kemp, 2002). As at November 2008, the value of signed PPP health deals in Scotland was £1.1 billion (HM Treasury, 2008). Secondly, in Scotland the NHS health board pays the PPP unitary charge from the health board's revenue budget, which is the same part of the budget used to fund clinical services. This distinction from the rest of the UK places more emphasis on the affordability of PPP, since its costs are more likely to impact on clinical services.

The health case involves a new build on a greenfield site, where it 'excited considerable public interest' (Scottish Executive, 2006, p. 1), because it will provide a 30 bed low secure and a 44 bed medium secure facility for mentally disordered offenders (Scottish Executive, 2006).

The capital value is £17.9 million (Partnerships UK, 2009). In hospital projects the unitary charge, which for the case study was forecast as £3.9 million, is usually fixed for the period of the contract, with an annual uplift for inflation. The services element may vary as a result of benchmarking/ market testing every five or seven years. An important feature of this case is that there is no competition as the project attracted only one bidding consortium led by Balfour Beatty and Canmore Partnerships. To simulate a competitive environment, a shadow bid was prepared by Ernst and Young, a leading firm of chartered accountants. The structure of the PPP contract is as follows:

Figure 6.2 The health case



According to its response to the Scottish Futures Trust consultation document (Canmore, 2007), Canmore Partnerships is a Scottish based specialist promoter of public use infrastructure projects in which the public sector continues to provide core services: hospitals, colleges and schools. UME describes itself (UME, 2009) as a planner, manager, developer, commissioner and operator of hospitals in 23 countries including the UK. It acts as an investor and health advisor and has been instrumental in the development of PPP. Quayle Munro is an Edinburgh based independent merchant bank, involved in PPPs both as investor and adviser. It is the consortium's financial adviser and will administer the project company.

The public sector was advised by financial, legal and insurance specialists, and received advice from Currie and Brown, an international asset management and construction consultant firm, for other services. The private sector was advised by legal, financial, technical and insurance specialists (Partnerships UK, 2009).

Background to the education sector

In education, there are now some £9 billion of signed PPP deals: in England £5.2 billion, Scotland £3.2 billion, Northern Ireland £0.5 billion, and £0.1 billion in Wales (HM Treasury, 2008). To provide some context, total UK education spending estimates are shown in Table 6.3.

Table 6.3 UK education spending*

	£Billion			
	Estimate		Projections	
	2007-8	2008-9	2009-10	2010-11
Total UK education	77.7	81.8	86.1	92.0
UK education as a proportion of GDP (%)	5.5	5.6	5.6	5.6

*UK education measured consistently with international definitions from the UN classifications of the functions of government (COFOG). Actual outcomes are subject to spending decisions by local authorities and devolved administrations. These figures reflect HM Treasury's latest indicative assumptions on the expenditure of local authorities and devolved administrations.

Source: HM Treasury http://www.hm-treasury.gov.uk/d/pbr_csr07_completereport_1546.pdf (accessed 20th April 2009).

While the impact of the recent financial crisis on PPP procurement is still unclear, there is evidence from the National Audit Office that in England, previously announced targets under the Building Schools for the Future programme (BSF) are not being met, and that forecasts have been too optimistic especially in difficult market conditions (NAO, 2009). In these circumstances, it is interesting that in a variation to other PPP contracts, BSF was designed to involve public sector as well as private sector equity.

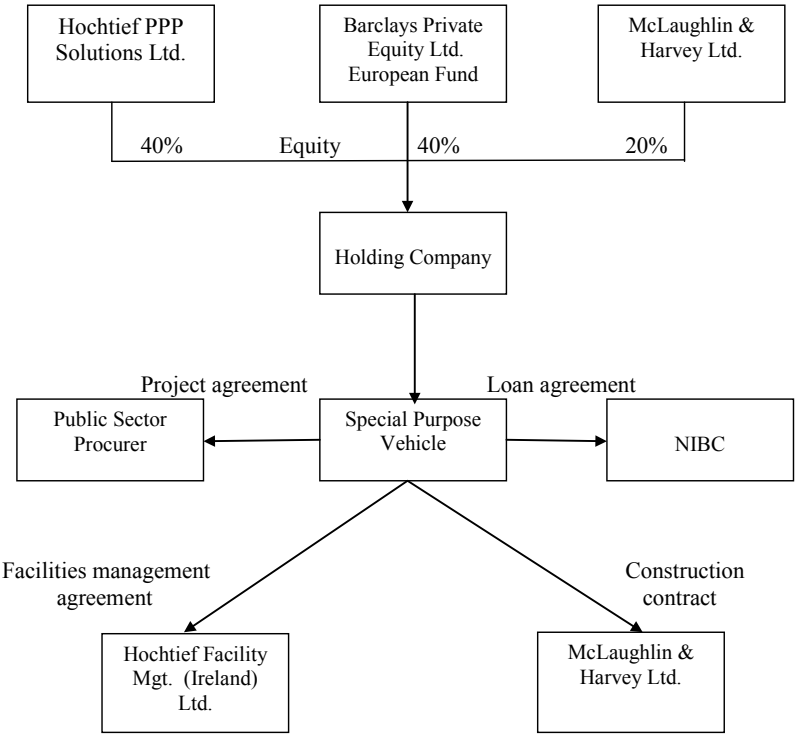
The two case studies are located in Northern Ireland, where education is administered by five Education and Library Boards and the Council for Catholic Maintained Schools (CCMS). One case study is currently managed by CCMS and the other by an Education and Library Board. However, this will change with the creation of a new organisation, the 'Education and Skills Authority' in January 2010.

Local education authorities are primarily responsible for preparing investment proposals (or economic appraisals) and establishing priorities for their respective geographical area. Proposals are submitted to the Department of Education Northern Ireland for inclusion on a 'Schools Capital Priorities Planning List', and eventually on a 'Contenders List' (DENI, 2002). The SIB works closely with the government departments since education forms part of its overall sustainable investment strategy, and it will be responsible for taking forward and supporting the building and refurbishment of over 100 schools across Northern Ireland in the period 2008-2011 (Strategic Investment Board, 2008).

This investment aims to address the huge backlog of building work estimated at 100 projects, with construction costs of £500 million, which the government has argued cannot be addressed by conventional procurement means alone. The first two tranches of this investment include 17 projects to be funded under conventional procurement (13 primary, 2 special and 2 post-primary schools), with a combined capital value of £62 million, and up to 8 secondary school projects with a total capital value of £70 million, funded as PPP projects subject to VFM being achieved (Strategic Investment Board, 2008).

The first school case involves the design, construction, maintenance and operation of two new schools. The project was announced in November 2002 and the contract was signed in 2006. The two schools became operational in February and April 2008. The capital value of the contract is £34.7 million and annual unitary payments, which may fluctuate depending on inflation rates, are expected to be £4.4 million commencing in 2009/2010 (HM Treasury, 2008). The structure of the PPP contract is as follows:

Figure 6.3 The first school case



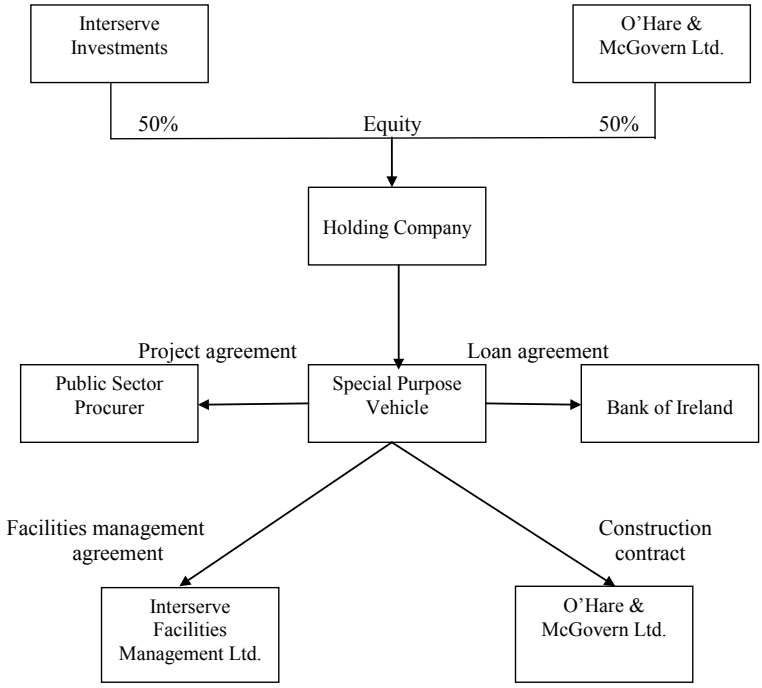
Hochtief PPP Solutions is based in Essen Germany, with business units in several countries including the UK. As a member of the Hochtief Group, in which it describes itself as the competence centre for PPP, it focuses on roads and social infrastructure (Hochtief, 2009). Barclays Private Equity Ltd. is a division of Barclays Capital and ultimately a wholly owned subsidiary of Barclays Bank plc. It describes itself as one of Europe's leading mid-market private equity investors, having raised in excess of £1 billion across five PPP dedicated infrastructure funds (Barclays Private Equity, 2009). These funds include both primary market investment in new development and secondary market investment in operational projects (Barclays Private Equity, 2009). McLaughlin and Harvey is a building and

civil engineering contractor, describing itself as one of the largest in Northern Ireland (McLaughlin and Harvey, 2009).

The public sector was advised by financial, legal, technical, professional indemnity and insurance specialists, and the private sector by legal and financial specialists (Partnerships UK, 2009).

The second school case involves the design, construction, finance, maintenance and operation of school accommodation and related services. The PPP contract was advertised in December 2003, signed in September 2006, and the school was opened in August 2008. As is common in schools contracts, demand risks remain with the public sector which is also holding risk associated with any contractual changes arising from expansion of pupil numbers or changes in the curriculum. The capital value is £31 million and the unitary payments which commence in 2009/2010 are expected to amount to £4.1 million per annum (HM Treasury, 2008). The structure of the PPP contract is as follows:

Figure 6.4 The second school case



Interserve plc is a support services group with capabilities in design and construction, engineering and facilities management (Interserve, 2009). Two group companies have interests in this project. Interserve Investments will manage the group's equity investment in this PPP, and Interserve Facilities Management Ltd., which has experience at three other Northern Ireland education PPPs, will provide facilities management services worth approximately £16 million over the contract's 25-year lifetime. O'Hare and McGovern is a chartered building company, describing itself as one of Ireland's leading construction companies (O'Hare and McGovern, 2009).

The public sector was advised by financial, legal, technical and insurance specialists, as was the private sector (Partnerships UK, 2009).

Background to the housing sector

As at April 2009, £1.7 billion of housing PPP projects have been signed in the UK, all of which are based in England (Partnerships UK, 2009). Again, to provide context Table 6.4 shows total housing expenditure estimates.

Table 6.4 UK housing spending

	£Billion			
	Estimate		Projections	
	2007-8	2008-9	2009-10	2010-11
Housing UK*	12.0	12.5	13.1	13.7
Of which housing investment	8.1	8.7	9.1	9.5
Housing England	8.8	9.1	9.6	10.0
Of which housing investment	6.0	6.4	6.7	7.0

*UK and England Housing Community Amenities measured consistently with international definitions from the UN classification of the functions of government (COFOG). Actual out-turns are subject to spending decisions by local authorities.

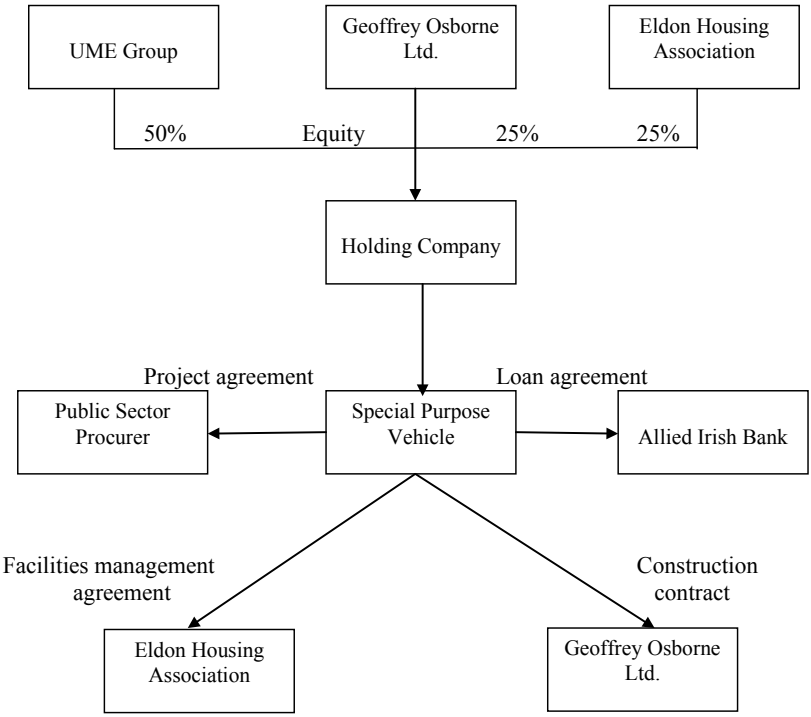
Source: HM Treasury http://www.hm-treasury.gov.uk/d/pbr_csr07_completereport_1546.pdf (accessed 20th April 2009).

This sector is less mature than the three larger sectors. In the early days of PPP, statutory requirements in this sector imposed certain contractual restrictions that might have prevented or inhibited its use, especially where the scheme was a Housing Revenue Account (HRA) PPP. For example, the Housing Act 1985 has provisions about the delegation of housing management, and the Landlord and Tenant Act 1985 has requirements about obtaining quotations for maintenance work on leasehold dwellings, which are not consistent with the use of PPP. However, in 1998 local government capital funding regulations were relaxed to allow PPP to be used for refurbishment projects involving HRA land (Knox *et al.*, 2003). One issue that remains is that contracts must accommodate the withdrawal of some houses from the PPP if tenants exercise their statutory right to buy a property.

The housing case is located in London. It involves the design, build, operation, maintenance and financing of a grouping of one extra-care sheltered housing unit and attached day facility, two resource centres for mentally frail older people and one resource centre for physically frail older people. It comprises 40 extra-care housing units, 150 bed places, 120 day places and office accommodation for a one-stop dementia service with over 50 staff (Partnerships UK, 2009). Due to the nature of the accommodation, right to buy is unlikely to be a significant risk in this project.

The capital value of the project is £43.72 million. It forms part of the Department for Communities and Local Government's third round of social housing, which is also funded by the Department of Health's social care PPP programme. The PPP structure is as follows:

Figure 6.5 The housing case



Geoffrey Osbourne Ltd., one of the UK's leading family owned construction civil engineering and property services companies (Osbourne, 2009), designed and built the housing. The contract's facilities management will be delivered by Eldon Housing Association, the registered social landlord. UME, whose interests are mainly in health care, is simply an investor in this project. Allied Irish Bank provided two loans, one to the SPV and one to Eldon Housing Association, a registered charity, to provide its equity investment.

The public sector was advised by financial, technical, professional indemnity and insurance specialists, and the private sector by legal, financial and insurance specialist, while Geoffrey Osbourne Ltd. provided the technical advice (Partnerships UK, 2009).

Background to the prison sector

The UK has been described as the second largest private correctional market in the world (GEO Group, 2004), behind the USA. The government's rationale for private sector involvement in prisons has been the spiralling costs of the prison system and the shortage of places (Coyle, 2007).

As at November 2008, there were 140 prisons in England and Wales under the responsibly of HM Prison Service (HM Prison Service, 2009), 15 prisons in Scotland under the responsibility of the Scottish Prison Service (Scottish Prison Service, 2008) and three prisons in Northern Ireland under the responsibility of the Northern Ireland Prison Service. Of these, 11 prisons in England and Wales and two in Scotland are contractually managed by private companies such as GSL, Serco, Kalyx and G4S Justice Services. As with roads, in prisons the private sector provides the full range of services, so that it employs all prison staff up to and including the Governor.

Although as in most other sectors the public sector retains demand risk, PPP in prisons has been somewhat controversial in the literature in both the UK and the USA, because it introduces the concept of prison as a marketplace, which will inevitably expand (Coyle, 2005). In this sector there is significant political risk associated with under capacity.

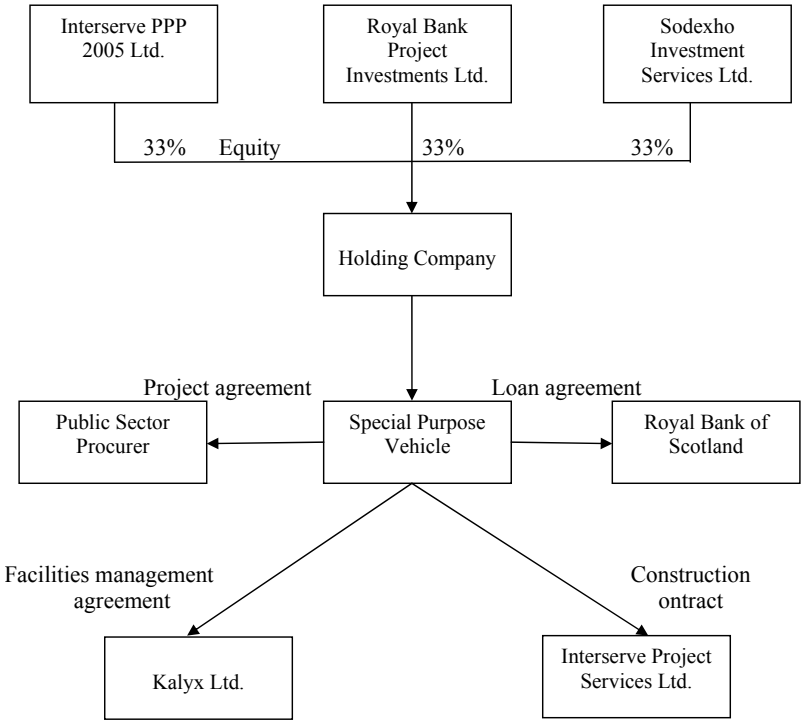
Our case study prison is located in Scotland, which spends about £340 million per annum on prisons. Estimates from the Scottish Consortium on Crime and Criminal Justice (SCCCJ) show that including the newest prison, Addiewell, Scotland will have 1,400 prisoners in private prisons by 2009 (Coyle, 2007). At a level of 17% of Scottish prisoners, this is well above international averages. For example, the Prison Reform Trust estimates that prisoners in private facilities account for 11% in England and Wales, and 7% in the USA, although it does suggest that the Australian figure is also 17% (Prison Reform Trust, 2009).

This position may change in the future. Following the election of the SNP in 2007, consideration was given to the possibility of terminating the PPP prison contracts. Ultimately it was decided to continue with Kilmarnock which opened in 1999, and Addiewell which opened in December 2008, as PPPs because of the complexity and prohibitive costs of terminating these projects. But the procurement process for the planned

replacement prison at Bishopbriggs was suspended and the project was re-tendered on the basis of design and build only.

The prison case involves the design, finance, build and operation of a 700 place facility at a capital cost of £65 million. The project is governed by the standard form of contract in SoPC3 guidance, and provides for a revision to the unitary payment based on a formula linked to RPI. The net present value of the contract is £369 million, equal to about £15 million per annum over the 25 year term. The structure of the PPP contract is as follows:

Figure 6.6 The prison case



As in the second school case, two Interserve Plc group companies are involved in this case, one as an equity provider and the second Interserve

Project Services Ltd. is the design and build contractor. Although the Royal Bank of Scotland has announced its withdrawal from long term project finance, in March 2009 it reaffirmed its commitment to the UK PPP market and is to reorganise its PPP structure (Project Finance, 2009a). The banking group is also the senior lender to this project. The Sodexho group describes itself as committed to developing PPP, both as a facilities management service provider and as an equity investor (Sodexho, 2009). Kalyx Ltd., a wholly owned subsidiary of Sodexho, is the operator for this project.

The public sector was advised by financial, legal, technical and insurance specialists, and the private sector by legal, financial, technical, professional indemnity and insurance specialists (Partnerships UK, 2009).

The description of these five cases shows that the structure of the PPP arrangements is complex, so that the procurer needs to manage relationships with multiple organisations, and not just the single contracting entity, the SPV, which in practice is normally a shell company. The procurers and the private sector also seek professional advice from a range of specialist organisations. It is notable that many of the players in PPP describe themselves as leading organisations in their field.

This complex array of relationships is acknowledged by financiers. For example, E2 argues that it is important but sometimes difficult for his company to be close to the ultimate client, that is, the public authority, in order to fully understand the nature of the project.

The next section of this chapter explores some perceptions of risks drawn from these cases. As explained in chapter four, in order to protect the confidentiality of our interviewees, the following codes are used to identify their backgrounds. Interviewees from banks or financial institutions providing mainly senior debt are coded SD 1–8, those from institutions that provide mainly equity are coded E 1–7, interviewees from organisations that provide equity but also are contractually responsible for the construction of the infrastructure or the provision of operating phase facilities management services are coded CE 1-8. Finally, interviewees based in the public sector are coded PS 1-8.

Risk – A public sector perspective and potential impacts

This section examines risk issues from the perspective of the public sector interviewees, and considers some contrasting perspectives from the financiers. Procurers often have quite limited experience of PPP, which is usually, but not always, gained in one sector. They are likely to have gone down this procurement route through lack of alternatives, rather than choice. The following comment is typical in terms of the selection of PPP as a procurement mechanism, although in other sectors there may never have been the prospect of public money for projects:

> *We thought there was going to be conventional money... then it turned out that there wasn't and you could say the centre (government) said you have to go the PPP route.* (PS1)

In sharp contrast, the financiers tend to have experience of more deals across more than one sector as shown in Table 5.6 (see chapter five), although there may be a predominant sector of interest (Table 5.7), especially amongst equity investors who are also facilities management or construction contractors. Consequently, at interview the financiers are typically able to draw on a wider range of experience than most public sector interviewees. Nevertheless, it is possible to identify some common attitudes to risk amongst the public sector interviewees and common concerns about risk across the five sectors, as well as some differences, even though the specific details may be sector dependent.

Commonalities feature in terms of:

- Managing demand risk, with the exception of the roads case where the private sector carries this risk.
- The need for, but perceived lack of, flexibility in contracts and in the use of buildings during the long operational phase of PPP contracts.
- Concerns about the impact of risk factors on service users.

Before examining each of these in turn, the next section first considers some implications of the lack of PPP experience amongst procurers.

Inexperienced procurers

In 1999 the Treasury Taskforce (HM Treasury, 1999, p.1) launched the first version of its contract standardisation guidance to avoid 'the pitfalls of the past' and the need 'to re-invent the wheel at considerable expense'. This guidance, which is the outcome of some two years of work and consultation, is intended to be a practical toolkit for the public sector to deliver the best value to the taxpayer. Its introduction, and subsequent revision to the current version launched in April 2009, represents a tacit admission of a lack of expertise in the public sector and the complexity of risk allocation identified by Ng and Loosemore (2007). While the standard format allows for some items to be negotiated, the Treasury's objective is that re-negotiation of the major standard contractual terms should not occur. The intention is that these standards are all inclusive, that is, if a risk can be identified it should be included.

As Table 5.25 shows, just less than 40% of questionnaire respondents prefer to re-negotiate the terms in these standard contracts, while about one third do not. In practice, interviewees from both sectors agree there is very little deviation from these contracts. One reason for this is provided by a public sector interviewee:

> *The standard school contract has been carefully balanced, and we don't want to upset that balance and maybe inadvertently by changing one aspect of it, it has a knock-on effect to another aspect.* (PS5)

Thus, the early lack of expertise in the public sector appears to have led to the standardisation of contract terms, even though the risk allocation may not be optimal (Quiggin, 2005).

While public sector interviewees now recognise the importance of being a knowledgeable or 'intelligent' procurer (PS2), their continued perceived lack of PPP experience leads to frustration amongst the financiers,

especially in relation to their inability to understand basic banking practices (E2) and to write definitive project specifications. The following quote is representative of a general conception:

> *We're almost in the situation of saying we won't do business with the Ministry... because they're hard work. They don't know what they want, they don't manage the process and they change things as you go along. We've been bidding a project... for nearly four years because the Ministry... simply cannot get their act together... it's costing us a fortune and what if we lose?* (CE3)

The effect over time may be a loss of competition for projects perceived to be difficult. A number of interviewees from construction and facilities management organisations argue that, because of the high bidding costs, they select carefully between projects before deciding to bid (PS1). The publication by government departments of their forthcoming pipeline of projects assists this choice, and is in turn used by the public sector to encourage bids.

A further issue regarding inexperienced procurers is the perceived lack of seniority of project managers. This is a source of frustration to contractors because it leads to decisions being overturned late in the negotiating process. Especially in hospitals there is a perception that projects, which are typically large and complex, are likely to be managed by an estates director, who lacks sufficient seniority:

> *Inherently on larger construction projects there is more of a likelihood of failing... It (a large hospital) needs an extremely sophisticated, excellent project manager, but his (estates manager) job is not procuring large infrastructure projects... and if you then look at his seniority within the Trust Board, the estates director will not be as senior as the medical director... and sometimes the estates person is not even on the main board.* (E5)

Smaller projects, especially those with separability of the component parts, create less risk:

> *We regard social housing, where you've got 1,500 dwellings, as fairly low risk as opposed to one great huge hospital. If it starts to go wrong you've got one huge great hospital to finish, with social housing you've got so many units completed... it's phased.* (SD4)

A related issue is identified by CE3. He argues that schools projects are 'very, very simple' especially if there is a strong Local Authority that takes decisions on issues like furniture for a group of schools, rather than allowing individual head teachers to make separate decisions. That is, in this instance, a strong decisive procurer is preferred. However, it is also the case that an overly knowledgeable procurer may not be desirable. In relation to a project with very specific design requirements that the public sector has 'thought about very, very carefully, because that is a very particular service' (PS6), this procurer believes that the private sector company has become frustrated by a lack of flexibility in negotiations, but he argues:

> *They tried to change it (the public sector design) without really understanding the process and without really understanding the service delivery requirements and I think that created some tension.* (PS6)

Managing demand risk

In four of the five sectors, demand risk is retained by the public sector, because the private sector is unwilling to carry this risk. The exception is the roads case, where many investors have significant experience both in the UK but especially abroad in holding traffic volume risk. As one equity investor says in relation to the demand for social housing, 'We wouldn't take demand risk as in population' (E1), and a banker expressed a typical sentiment in relation to hospital projects:

> *Clinical is another area that banks avoid, we don't want to get involved in patients and all that stuff. Patient choice, for instance, would be another issue that's coming up now. If patients choose not to go to that hospital, the hospital's not going to get the revenue – we don't want to know about that.* (SD4)

Consequently in four sectors, demand risk is a huge issue for the public sector, given the fixed and legally binding nature of the unitary charge over the long term.

Holding demand risk implies the potential for under or over supply of services. If there is under supply, there is potential for political damage since public services are intended to be of a universal nature, especially in sensitive services such as health, housing and education, or in the case of prisons where capacity shortages may lead to the early release of prisoners. However, interviewees deem lack of capacity to be a sector wide problem, requiring further investment. Therefore this tends not to be an area of much concern to them; they are much more focused on the risks and performance of existing projects.

The one exception is the prison service, where prisons are built with a core capacity, which can be expanded to meet need. Such expansion tends to reduce the cost per prisoner place but implies overcrowding, which impacts on the quality of prisoner experience and especially opportunities for education and training, and increases the risk of prison incidents:

> *There is risk associated with additional prisoner places... so there is heightened risk of taking and managing an overcrowded prison, but then there is a financial incentive to do so.* (PS4)

From the perspective of most public sector interviewees, the greater concern is that actual demand might fall below that forecast for a PPP project. In the health sector, this concept is a relatively new phenomenon caused by internal market reforms:

Ten years ago if you said to the Chief Executive of a Trust, do you think you will not have enough patients, he'd say are you mad. I always have too many patients, but my problem is treating the number of patients who keep coming. (PS6)

From the perspective of a private sector equity investor, concern about too few patients is a very real phenomenon amongst procurers, although it may have reduced over the past year:

They're really quite concerned that they're not going to have enough patients, they're probably less concerned than they were a year ago, because a year ago there was more talk than there is now of compulsorily having to send a certain amount of their patients to the private sector. At one stage it was thought that 30% of the patients, who currently go to a normal district general hospital, were going to have to go to the private sector – as it turned out the private sector didn't actually have the capacity or the will to treat most of them – just a small political oversight. (E4)

The risk that PPP brings, in the event of low demand, is that the procurer will be forced to pay the unitary charges irrespective of use. In this event there is a financial imperative to channel demand from elsewhere in the sector. But such channelling of demand may distort provision of services throughout the geographical region, and may be politically sensitive, creating a new form of risk for the public sector (Edwards *et al.*, 2004). The school cases illustrate this in two ways.

Firstly, the school trustees at one of the two cases are required to give a commitment that they will manage enrolment in schools over a wide geographical area, so that the PPP school is able to fill its capacity. This explicitly is understood to mean that future builds might be reduced from their current size to enable the filling of the PPP school. As this is known to be politically sensitive, discussions took place about acceptable travel distances for pupils, even before the school opened. Similar sensitivities, about the length of family journeys to visit prisoners, were raised in the prisons sector.

Secondly, the school cases also raise a further demand management issue around allocating pupils to schools to meet their religious affiliation needs – an especially difficult task in the context of Northern Ireland. Like the grant maintained schools in England, Northern Ireland has a number of independent schools that are run by the board of governors with little input from outside. One of these independents is bidding for a replacement school but is unlikely to be asked to manage its enrolment in the same manner as our case school because there is no other school affiliated to the same religion with which to manage the allocation of pupils. This raises the spectre of inequality between schools:

> *As far as I'm concerned there is inequality in the system... we have raised this with the department because we need to get to a basis where everybody is being treated the same.* (PS5)

Northern Ireland currently has no PPP housing projects but PS7, who has knowledge of housing development in the region, raises similar concerns about the allocation of tenants to houses in Northern Ireland, since tenants have strong preferences about geographical locations that are driven by religious affiliation.

The English housing case also raises two issues around tenant choice and equity. Firstly, while the private sector would prefer to house tenants with regular incomes than, for example, homeless emergency cases (PS3), for the sake of equity, as PS7 argues, 'The accommodation policy has to have general requirements'. Secondly, unlike the other sectors examined in this study where the service is free at the point of use, tenants pay rents that generate the SPV's income, and therefore housing demand and tenant allocations must be managed to ensure that 'rents don't zoom up and down' (PS3). To manage these sensitivities, the council retains responsibility for allocation of tenants to houses. Holding demand risk and managing pupil and tenant allocations are thus examples of the public sector holding political risks as Bing *et al.* (2005a) suggest.

Flexibility and affordability

The nature of PPP creates the following two risks for the procurer in terms of the suitability of infrastructure, but mitigating these risks may have impacts on the affordability of the project.

Firstly, in a PPP contract the public sector loses some ownership type control over the infrastructure, leading to conflicts between the new private sector owners and the users. Relatively minor but important activities, perceived by the public sector as normal use of such buildings, create anxiety for the SPV:

> *The nurses in a ward cannot just go and get a nail and a hammer and knock a picture into the wall because it could be that there is a wire in there... it's not their building, it's ours... It sounds bad but actually it is the only way you can make sure these buildings are maintained.* (E5)

A similar example is given in relation to potential damage to paintwork in schools caused by using Blue Tack to display pupils' art (PS2).

Secondly, over the long life of PPP contracts, the design of buildings may become obsolete, which necessitates a design that enables future flexibility of use so that buildings can be adapted to deal with change. For example, the use of space might change between relatively easy to maintain office space and relatively expensive living accommodation in communal housing or clinical accommodation in hospitals. As a senior procurer in education argues:

> *The building (a school) becoming obsolete is a real issue for us – so that was a risk. The concept that you have a classroom where it's 60 square metres where 30 children sit, and they don't really move away from their desks may become obsolete in the future, so what you need is much more flexible space, where you have more break out spaces, where you have bigger spaces... we also could try and make sure that we have suitable connections to IT to try and take account of some of that change, so it's a big risk for us. It's a big risk that the schools could become obsolete.* (PS2)

In terms of building or road obsolescence, interviewees also focus on alterations that might be needed to satisfy future changes to law. Non-discriminatory changes in legislation may be held by the private sector, but are likely to be a shared risk. In relation to buildings, interviewees are concerned about potential changes to reflect new requirements in relation to environmental impact, and in relation to roads, issues are raised about increases to weight limits on the size of heavy goods vehicles.

Although being locked into a long term contract exacerbates this risk, it is not created by the nature of PPP alone, but is also attributable to centralised control at department level, exercised in two forms. Firstly, in terms of cost, the Department of Education for example sets an expected cost for a given size of school, which 'we can never exceed' (PS2). Secondly, in terms of design specifications, the education handbook for example establishes clear expectations about school and classroom design, and consequently limits the possibility for variations from standard. Similar control occurs in the form of the Highways Agency's standard roads manual, which Edwards *et al.* (2004) argue reduces the possibility for innovation. This multi-volume manual, which is adopted by the Northern Ireland Roads Service, establishes quite detailed expectations about both road design and quality of maintenance with the effect that:

> *The one thing I can say about roads is the whole way you build roads is very well structured, and it all comes from the Department of Transport and the Highways Agency... there is a standard set of rules... It is a fairly regulated sector, design, speeds, etc.* (PS1)

In terms of suitability for continuing use and the potential costs of major re-design at some future date, E5 argues that especially for schools and hospitals, it may be cheaper and more effective to pull them down and rebuild after thirty years, rather than continuing to maintain them. This may have impacts on the appropriate length of PPP contracts, which should not extend, E5 argues, beyond the life of the building. This contrasts with the norm in the roads sector, where it is argued that 'You cannot perceive that it (the road) won't be required' (PS1), and where roads are expected

to be handed back at the end of the contract with a considerable ongoing term of life expectancy.

To mitigate these risks, public sector interviewees are clear that flexibility is an important aspect of the relationship with their private sector partners. While this is not disputed in terms of finding solutions to specific problems, financiers have a different perspective about the value of flexibility when it applies to amendments to contract specifications, either during contract negotiations or after financial close.

Financiers perceive sectors with high rates of current or potential future change as especially risky. They argue that one of the benefits of PPP is that it forces the procurer to specify precisely what is required before financial close, thereby reducing costs. Good advance planning avoids late amendments to contracts which tend to be expensive for providers and procurers alike. Two equity investors (E5 and E6) explain that late changes are disproportionately expensive to manage in terms of the sequencing of construction activities, regardless of the method of financing:

> *Minor changes really hit the critical path, in the end you will find you will overrun on a 300 million project by 20%, you will be 50 or 60 million overrun because of some relatively minor changes... but quite numerous minor changes.* (E5)

Moreover, the involvement of senior debt holders and their advisors in PPP adds an additional complication to contract amendments whether made before or after financial close:

> *We have to talk to the lenders, the lender then gets his lawyer involved... and you almost reinvent the whole thing again... you've got to go back to the lenders before you can do anything, you're actually not empowered in any way to manage the business in a way that normal business is managed – you're managed by your creditors.* (E2)

From the perspective of these investors, the benefit of PPP is that, especially after financial close but sometimes during contract negotiations, the additional cost of such changes can be estimated. The high cash cost may lead to a perceived beneficial outcome – the proposed change being dropped. But, from the perspective of the procurer, dropping desirable changes may have disadvantageous impacts on the usefulness of the building, which is a potentially serious problem over very long contracts.

The inevitable trade-off between flexibility and affordability is acknowledged in both public and private sectors. Public sector interviewees stress there is a trade-off between flexibility and cost, which impacts on the affordability of projects, and that ultimately flexibility may be sacrificed because 'affordability is key' (PS4).

> *At the end of the day have we got something that is affordable? And that's the important thing from my point of view.* (PS6)

An equity investor (E2) indicates that evaluating and valuing flexibility is 'the big unknown', and CE5 explains that when choosing to bid for projects, his company tries to avoid procurers with over-ambitious projects that their budget cannot meet: 'We look for clients that we think can afford the projects that they want' (CE5).

Impacts of risk on service users

Impacts of risk on service users normally occur during the operational phase, but may arise during construction of, for example, housing if tenants need to be decanted, or if construction is taking place in close proximity to existing buildings.

Public sector interviewees in the education and prisons sector identify a difference in perception between themselves and some private sector partners, in relation to risks that impact on service users, especially pupils and prisoners who might be perceived as vulnerable. In education, PS2 argues that designers and financiers are ready to accept that certain problems might occur and that the appropriate action is to insure against any associated costs,

whereas his concern is that some problems should not occur at all, because children are involved. He provides two such examples:

The first relates to the timing of construction work to ensure that children are not faced with taking examinations while noisy building work is ongoing:

> *You can take out insurance policies to protect yourself against parents suing you, but that is not the way to deal with it... you end up paying some parent a few quid for it, but the reality is you have messed up some 16 year old's chance to do an exam, and all of that does for the rest of their life... so money doesn't cure everything... the way to deal with it is to ensure the 16 year old who is doing the exam is not disrupted.* (PS2)

The second example relates to the design of toilets in a school, where the impact on pupils could become evident in the operational phase:

> *I had an interesting conversation with a designer... We queried an element of what they were proposing on the basis of child protection and his answer was – don't worry, my liability insurance will cover you if something did happen, and I said you can't deal with child protection like that... if you go to court because some child has been upset or abused, the defence that I have in place an insurance policy is no defence at all because the child has been harmed. Money doesn't make the harm right.* (PS2)

Thus, even where the risk legally lies with the contractor, the public sector may hold associated public relations or reputational risk. In the event that a problem arises, there will be a financial penalty for the contractor, but the public relations risk does not transfer to the SPV. Interestingly, the interviewee's perception is that the construction contractor, who has experience of running health and safety on sites, understands the need for prevention much better than the designer and financiers, who are further removed from practice.

In respect of the operations phase of PPP, several interviewees note that prisons present complex issues, because in the UK the private sector provides the core service, including the prison officers and the custodial services, not just peripheral services as is usual in the other social sectors. Public sector concern is expressed about the capacity for and quality of prison officer training in the privately run prisons, although it is acknowledged that some private prisons are operated to good standards. The risk perceived by the procurer is a loss of control over the quality of a service involving vulnerable prisoners, especially because the transfer of core services is not common elsewhere in Europe:

> *The models across Europe vary, but in most countries... they use the private sector to construct and to maintain the fabric of the facility, but they don't usually provide the custodial operating services.* (PS4)

Indeed a financier acknowledged, specifically in relation to prisons, that pay inflation over the long term could result in unfavourable changes to operating practices:

> *There is a lot more to the operational side and the performance mechanisms, and things that you can't afford to get wrong, like letting prisoners out accidentally... and you are obviously taking a risk on the labour force's remuneration over the next 25 years, that's a pretty big risk... If you start losing money on the contract, you may try and cut corners... to manage that asset more efficiently.* (SD1)

Furthermore, in the event of unacceptable performance or contractor failure, the specialist nature of prison concessions means that it may be difficult to find a replacement contractor quickly, increasing risk for both the public and private sector.

The impact of risk factors on users in the roads sector is expressed in terms of the availability of the road and its condition, including its condition at the end of the contract. The importance of availability has led to a change in the payment mechanism, which in the early UK roads PPP contracts was based exclusively on traffic volume. Current pricing mechanisms, which

are intended to incentivise the contractor so that any disruption to the travelling public is minimised, are now also based, as in most sectors, on the availability of the infrastructure, because from the perspective of the public sector, 'asset availability is a big issue' (PS1). The new pricing mechanism incentivises the scheduling of repairs outside peak times, and seeks to ensure that the road will be maintained in a serviceable state:

> *The road has to be kept to a serviceable state, fit for purpose to the users and if it falls below certain service ability limits, it is deemed to be not available and they (the contractors) won't get paid.* (PS1)

Summary

This chapter provides information about each of the six cases and some background to the sector in which the PPP is sited. The chapter draws a distinction between the wider PPP expertise of the private sector interviewees and the typically narrower experience of the public sector interviewees. It notes that while investors find dealing with inexperienced procurers frustrating, it may be the case that knowledgeable procurers exhibit independence that is also frustrating for contractors.

Chapter three notes that risks affect behaviour when their consequences are personally relevant (Williams *et al.*, 2003), and when they materialise (Abednego and Ogunlana, 2006). The empirics in this chapter, drawn from three large and two smaller PPP sectors, confirm these tendencies. The standard contract is generally adhered to carefully by the public sector, and interviewees close to a specific project tend to focus on the management of risks they retain. Although the details of PPP risks vary across the five sectors, there are commonalities about the significant risks from the perspective of the public sector procurers. This chapter shows that:

- Demand risk is a significant risk for the public sector.
- Procurers especially focus on the potential costs of paying for services that are not required, and the consequent impacts on users elsewhere in the system, if there is lack of demand for PPP infrastructure or services.

- Managing demand risk enables the procurer to control political risks associated with pupil and tenant allocations to schools and houses.
- Building obsolescence is a real concern over long term PPP contracts. The flexibility of infrastructure to meet changing service or statutory requirements over the long term is described as very important.
- Trade-offs between flexibility in contracts and affordability of the unitary charge may lead to the sacrifice of infrastructure flexibility.
- The public sector is concerned about the potential adverse impacts of risk factors on service users, especially vulnerable users.
- Private provision of prison services is considered risky in the operational phase because of the potential impacts of rising labour costs on the quality of prisoner experience.

While many of these risk perceptions are acknowledged by the financiers, they also provide an alternative perspective. Certain activities within buildings add to maintenance bills. Changes to contract specifications, whether before or after financial close, are, they argue, disproportionately expensive and such cost drivers should be avoided, even though so doing reduces the flexibility of infrastructure use.

While some private sector partners, such as financiers and designers who are remote from the physical activities of the project, may be content to insure against the financial costs of risks that crystallise, public sector partners and contractors prefer to avoid incidents and the attendant impacts on service users and employees.

The mini cases show that multiple parties are involved in financing, advising on and delivering a PPP project. There is thus a complex structure surrounding the SPV and the procurer. The next chapter further examines the implications of this structure.

7 Transferring Risk in PPP

Introduction

An important rationale for PPP is that risk should be transferred from the public to the private sector but as chapter five reports, financiers indicate it is important that a wide range of risks are either allocated to subcontractors or fully insured. That is, typically the financiers do not wish to hold these risks. This chapter examines the diffusion of risk through the private sector companies and shows that:

- The typical organisational structure that surrounds PPP deals creates the need to diffuse risk through a network of private sector organisations.
- While a wide range of risks are modelled by parties to the deal, some risks are perceived as especially problematic because they are less well understood or hard to control over the long term life of PPP projects.
- PPP organisational structures create costs associated with project supports and risk mitigation measures that impact on the economic argument for risk transfer, both within the private sector and between the public and private sectors.
- An advice industry has grown up around PPP involving legal, technical, professional indemnity, insurance and financial services.
- During the credit crunch, refinancing has changed from an attractive and profitable option to a downside risk, and equity is under pressure to provide a larger proportion of financing.

This chapter has four sections which examine:

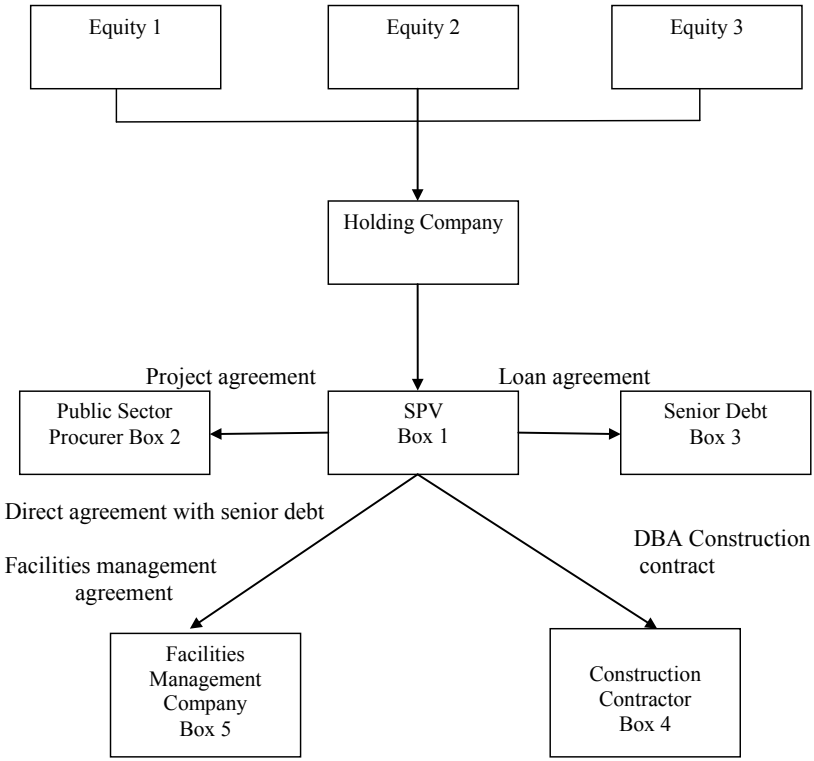
- The diffusion of risk through the organisational structure of the private sector companies involved in the PPP deal.
- The risk modelling process.
- The implications of the diffusing of risk and discussion of some implications for risk transfer between the public and private sectors.
- The re-financing and sales of investments.

The final section summarises the chapter.

PPP organisational structure and risk diffusion

Chapter six illustrates how the structural arrangements of PPP have a typical format, with four key elements. A typical PPP structure is illustrated in Figure 7.1.

Figure 7.1 A typical PPP structure



Firstly, equity investment is made into the SPV, shown in box 1 of Figure 7.1. Investment may be made by several equity investors. For some their interest is purely in the financial return from the investment (hereafter equity investors), but others are also subcontracting companies (hereafter contracting equity investors). These latter investors thereby have profit sources both from the construction or facilities management contract and from the financial return on their investment. As indicated in chapter two the level of pure equity, as opposed to subordinate debt, is deliberately very low:

> *In pure equity you are looking at really pinpoint stuff... because equity has such a huge demand in terms of returns and its influence on a bid.* (CE2)

Secondly, the SPV signs a 'Project Agreement', a legal contract, with the public sector procurer, shown in box 2 of Figure 7.1. The SPV is responsible for delivering the infrastructure and long-term service arrangements. Thirdly, the SPV signs a loan agreement to raise senior debt, shown in box 3. Senior debt is typically in the ratio of 90% senior debt to 10% equity. As such the SPV is:

> *Very thinly capitalised... you've only got 10% equity so when the project's going swimmingly the upside is very strong, but when the project starts to go wrong it doesn't take you long to burn through that 10%.* (SD5)

Senior debt usually takes the form of either a bank loan or bond, the latter being especially cost effective for large projects. However, bond financing pushes the burden onto the end of the payment period, which has been especially attractive to the NHS Trusts, because:

> *They resolve the immediate affordability problems in the short term, but all it means is you pushed the costs out for whoever's paying taxes in twenty year's time.* (SD3)

This interviewee suggested that a cynical taxpayer might ask some serious questions as to whether index linked bonding is an appropriate way to fund a 30 year asset.

Moreover, a contracting equity investor expressed a preference for a bank as opposed to a bond partner because:

> *The bank has a more direct relationship... the credit agreement is more relaxed, they're less demanding... bond holders are much more*

remote... They tend to want it (information) quicker, they tend to want more and they tend to be less flexible. (CE3)

This point was confirmed by a banker, who argued that bondholders have no direct interest in the PPP project, only in the bond:

Bond investors are sitting in the Cayman Islands, you've got a couple of guys in South America, and they're all over the place, you can't get them together. They've just invested in a fixed rate financial instrument, so those bond holders are not really knowledgeable or interested in PPP. (SD3)

Fourthly, since it is normally a shell company, the SPV will enter into a 'Design-Build Agreement' (DBA) with a construction contractor, shown in box 4, and contracts with the facilities management providers, shown in box 5. These companies are likely to be related companies to the equity investors. The DBAs are legally binding commitments to build the infrastructure and fulfil the service obligations of the project agreement. Any of the contractors, but especially the construction company, may in turn have sub-contracting arrangements in place to fulfil their own obligations.

Whereas early Project Agreements were negotiated between the procurer and the SPV, the Treasury's perspective (HM Treasury, 2006) is that mistakes were made and lessons learned. Consequently, public bodies now follow standard contracts, although these may have variations to deal with regional and sector specific issues. The standard contract, the current version of which is SOPC4, has evolved over time. It is an important technique for controlling all aspects of the contractual relationship, but of special importance here it covers the allocation of risk. Table 5.25 (see chapter five) shows that 80% of questionnaire respondents believe that risk transfer to the private sector has increased in the last four years and it is the perspective of some interviewees that the evolution of the standard contract has passed too much risk onto the private sector. However, others argue that while the public sector tries to transfer as much risk as possible there is now a more balanced approach.

Due to the number of private sector companies involved in the organisational structure, decisions must be made pre-financial close about specifically which of these companies is to hold each risk allocated to the private sector. Crucially the contracting party in the private sector is the SPV, but as it is typically a shell company it does not have risk carrying capacity. Therefore risk must be held by the equity investors or the senior debt holders or must be passed through the web of companies to the contractors and subcontractors who actually fulfil the Project Agreement's obligations. Alternatively risk may be allocated to a party that does not wish to carry it, in which case that party will seek to mitigate the risk. Examples include inflation and interest rate risks, which are often mitigated by hedging.

In Tables 5.15 to 5.17 financiers typically indicate it was either very important or important that a wide range of risks were either allocated to subcontractors or fully insured, and in Table 5.21 these two methods are identified as the most common means of limiting the financiers' risk. Moreover, in the credit crunch era the senior debt holders appear to have become more risk averse:

> *The risk has increased because of the attitudes of the banks... the risk in the deal hasn't (increased) but the requirement in terms of corporate guarantees, bonding requirements in addition that the banks will require and the general scrutiny that they will demand... has increased the risk.* (E5)

While such a risk averse position may be expected from senior debt holders, it is also evident, at interview, amongst the equity holders. A contracting equity investor is very clear that his company wishes to pass on as much risk as possible:

> *We don't want to be responsible for any of it (risk)... We pass on all our risks... Either it would go to the contractor, or it would be insured, or it would be council risk or (hospital) Trust risk... we deal with it as comprehensively as possible on the legal document.* (CE4)

This may in part be driven by the typical 90:10 debt:equity financing ratio. Under such a funding regime the perception is that there is little scope for equity to hold risk:

> *If you had a lot of risk sitting in there, there's no way you'd be able to do a 90:10 transaction, you'd probably do 70:30, or 80:20, so you're putting in more expensive equity and less cheaper debt. You can do 90:10, but it means that most of the risks – financial risks – have got to be hedged.* (E5)

However, it is also the case that senior debt holders are clear that risks should not be held by SPVs because they do not have the capitalisation to deal with the PPPs' risks.

Rather, in order to protect the position of the senior debt providers, there should be:

> *A pass through of all the material commercial risks, from the SPV borrower to the subcontractors.* (SD3)

That is, the financiers are interested in passing risk down the web of companies to the construction and facilities management contractors. So, the next section examines the models and project supports used to ensure that risks do pass through the organisational structure and are retained by the contractors, rather than reverting up the supply chain.

Modelling risk

As the PPP industry has matured, modelling of project risks, as well as cash flows, has become the norm. Banks tend to do their financial modelling in house, since this is their core business, although other parties may use external advisors' models. Models may be generic project finance assessment tools or may be more specific to PPP. Senior debt holders describe their models as globally applied throughout the bank, so that all project structures must fit the model, whereas several equity investors describe models that have

been built up from large databases that essentially capture the organisations' history of PPP experience. The modelling exercise is described as 'massive' by a senior debt holder (SD3), and by an equity investor (PE5) as 'very long and huge but not particularly complex'.

Models are regarded as confidential so that details cannot be provided, but interviewees suggest that an illustration of the risk factors considered in their models may be obtained by using the Moody's rating agency website, which describes in some detail Moody's PPP specific ratings methodology (Moody's 2007a and b). The Moody's model is not a cash flow model, as it focuses on expected losses, but it is widely consulted and highly regarded in the industry and as such offers a useful insight into the risk factors likely to be considered in the financiers' models.

Moody's rating methodology for PPP projects

Moody's publishes separate ratings methodologies for the construction and operations phases of PPP projects. These are intended for use on accommodation projects and services that support civil engineering works, such as roads, but not for projects with complex operating requirements such as waste-to-energy plants or defence.

To determine construction risk, Moody's adopts an analytical framework and a quantitative model designed to incorporate explicitly their assumptions about the following elements and their interactions:

- The likelihood of construction overrun.
- The value of parent guarantees from construction contractors.
- The benefit of financial supports, including performance bonds and letters of credit (Moody's, 2007a, p. 1).

The quantitative model uses Monte Carlo simulations to model projects on an expected loss basis. The simulation calculates the credit outcome for the assets in the portfolio for a large number of possibilities (Moody's, 2007a, p. 9), and combines this within a framework that incorporates aspects of construction that cannot be modelled but are likely to be critical to the

analysis. The analytical approach is to describe the elements of construction in terms of their default and recovery characteristics. A final credit rating is the result of a large number of simulations overlaid with qualitative factors reflecting each project's unique characteristics (Moody's, 2007a, p. 3).

The model assumes that few PPP creditors wish to hold raw construction risk, which in credit terms is the expected loss on the stand-alone project. Thus the rating methodology examines the nature of the raw construction risk, differentiating between standard, medium and complex buildings and civil infrastructure projects, and the construction risk mitigation package. The risk mitigation package incorporates one or more financial and performance supports:

- Contract supports ensure the contractor absorbs over-run costs, any liquidated damages to the public sector and debt servicing costs during the over-run period. The absorption of debt servicing costs is especially important as this improves the project's credit rating. The assessment covers both the contractor's ability but also willingness to pay. Interestingly, Moody's note that a contractor offering an unlimited guarantee may be more likely to default in the case of a large cost over-run.

- Performance/insurance based supports are essentially insurance policies written by multi-line insurers. The critical feature from the lenders' perspective is that such supports only pay compensation after a claim has been assessed and proved eligible, thus introducing the possibility of delay and/or non-payment. The subsequent loss of value to a senior debt holder results in a deduction within the model.

- Liquid/financial supports commonly take the form of bank letters of credit, bank guarantees and demand deposits, on which draw down is perceived to be timely and unconditional. To improve the credit rating of the project they must emanate from banks of high quality, and are modelled depending on the bank's rating.

- Equity is assumed to be within the range of 8% to 20% of total capitalisation. Due to the additional risk for senior debt, lower levels of equity would be evaluated outside the standard model (Moody's 2007a, p. 15).

These supports are designed to shield the SPV and the ultimate lenders from cost or time over-runs, and also have the effect of raising the credit quality of the project debt (Moody's, 2007a, p. 6).

Risk in the operating phase is assessed by Moody's in four steps:

- Project risk assessment, including an assessment of the business risk of the SPV, the volatility of revenue, the cost structure, the nature and harshness of the abatement regime and the likelihood of contract termination.
- Capital structure – structural enhancements to offset the risks of operating at high gearing will be assessed including liquidity support and step-in rights.
- Recovery on concession termination.
- Procurer's credit quality.

The first two steps form a substantial part of the analysis and are highly inter-related, in that a project with a weaker risk assessment would require a more robust capital structure for a given rating level (Moody's, 2007b, p. 5). At step one, the complexity of the SPV's obligations is separately assessed for each of the soft and hard facilities management and life cycle obligations. An adjustment may be made if services are subject to periodic benchmarking or market testing. The model assumes that the SPV is not exposed to material interest rate risks, as it is assumed that these have been passed to subcontractors or hedged. The model also examines the ability to terminate for Force Majeure, and termination payments in the event of default. At step two, the model calculates three primary credit metrics for each transaction, a minimum and an average debt service coverage ratio, and a cash break-even ratio, which may cause a change to the project risk assessment at step one, as may an assessment of the security provided by the step-in rights.

Although interviewees are unwilling to provide details of their own models, risk and risk mitigation packages do appear to be common across

the industry. However, despite the emphasis placed on the models by interviewees, concerns were also expressed about their usefulness:

> *The only thing you can guarantee in this business is it won't happen as the model predicts.* (E2)

The next section examines some of the risks interviewees identify as problematical.

Problematical risks

As indicated in chapter five above, in Tables 5.12 to 5.14 respondents indicate that a wide-ranging list of potential risks are either very important or important, so that it appears difficult to distinguish between risks. Interviewees explain that no risk can be ignored, all possible risks must be considered and covered, and that the distinction between the various types of risk is more subtle. This section seeks to explore some of these subtleties.

Some risks are more problematical than others because they are less well understood or hard to control.

> *Construction risk and ground risk we take them because we can manage them – that's our business, we know what we are doing. You then move into an area that is a bit grey, insurance risk... It's a market that you can't really control.* (CE2)

The literature review distinguishes between risk and uncertainty, and it is the interviewees' perception that the nature of these problematical risks is that they often involve uncontrollable uncertainty, as opposed to manageable risk. One example is the preference for new accommodation builds compared to refurbishment projects, which imply carrying the risk of latent defects in buildings. Physical assessment of such risk may be impossible and the perception is of a catastrophic experience by a major player:

> *The refurbishments, the transfer of risk, that's where Jarvis went bust. They took the risk on a lot of schools with latent defect risk.* (CE5)

It is interesting to note in this context the comment by E5 in chapter six. He argues that it may be cheaper to pull down and rebuild assets after 30 years rather than maintain them. But such preferences have the ability to distort capital investment programmes, especially if PPP is the only realistic investment mechanism for the procurer.

Many of the problematical risks arise because of the long term nature of PPP, and relate either to the pricing of future lifecycle costs, 'lifecycle is a big risk' (CE7), or predicting costs which may be volatile in nature. In practical terms the solutions involve hedging or insuring against risks which adds cost to the unitary charge, or modelling risk to calculate sensitivities and ultimately avoiding projects with a high level of uncertainty. Several equity investors noted that PPP contracts allocate them risk that they have no expertise to manage so that hedging is essential:

> *We hedge almost every risk we can find, and this is to cover the entire period of the contract. The company's expertise is in procuring infrastructure and managing it for the thirty year period of the contract.* (E6)

This company seeks to avoid 'taking unnecessary risks like interest rate risk or inflation risk' (E6). Commodity prices are also often hedged. Examples given included the cost of steel for buildings, and the cost of oil for roads contracts, because the price of the black top tarmac surface is dependent on oil prices. However, contractors may choose to hold these types of risk, in part because of the cost of hedging, which may cause the equity investor concern, especially on large projects with relatively long construction periods:

> *They (the construction contractor) build in an expected inflation on pricing and we hope to hell they've got it right because if they*

didn't then you could end up with your builder in trouble on a long contract – that's a risk. (E1)

General inflation, interest rates and changes in tax, which are uncontrollable by the SPV or its related companies, are modelled and sensitivities are run:

We'll run tax at fifty percent or some outrageous rate to see if it still works – it's all you can do... it's a slight risk on the bank but ultimately it's hitting the profit of the investor. (SD5)

The outcome may be to re-negotiate specific contract clauses, to withdraw from the contract in the event of risks that are so significant as to be 'deal breakers' (CE2), or to mitigate the risk, for example by way of interest rate swaps:

We can do interest rate swaps for thirty years that nail down interest rates. So it's very important for us that it is all completely and utterly fixed. (SD4)

While transferring interest rate risk enables the public sector to benefit from certainty about the future level of the unitary charge, there is also a downside, as SD4 acknowledged, since tying down interest rates may make early repayment difficult or expensive, should this prove desirable at a later date.

The credit crunch has created an unexpected situation that appears not to have been modelled. Many contracts enable facilities management service prices to be adjusted annually for inflation, but 'at the moment that adjustment is negative' (CE7), a situation that many contractors did not conceive possible.

Insurance costs are described as especially difficult to predict, in relation to the insurance based performance supports and changes in law. To reduce insurance costs a cap may be placed on the level of insured liability, so that risks above that level rest with the public sector:

> *There's a limit to what insurance you can take, so what we would do is translate the limits on insurance that you can get into a cap on the liabilities that we would accept through a change of law. If the impact is more... then the client takes the balance.* (CE7)

Furthermore, the process of transferring risk between the public and private sector partners may raise problems. A contracting equity investor argued that because public sector decision making time frames are typically longer than in the private sector this can impact on the management of these problematical risks because:

> *Every time the price changes we have got to go back to the department and justify the increase and because the department takes so long to look at figures and to make their assessment the price then has moved again. (*CE1)

In relation to interest rate movements the transfer of risk occurs at the date of financial close. However, since interest rates change on a daily basis this timing creates uncertainty both for the financiers and the public sector. Prior to financial close the risk of interest rates changing is held by the public sector, and changes will impact on the unitary charge:

> *Once we've gone to financial close then there are no finance risks for the public sector, but they take the interest market risks until the financial close. So if the interest markets change literally in the few days before we close, final swap rates are a risk that is taken by the public sector.* (E1)

To try to manage this uncertainty the procurer will instruct bidders to assume a given rate of interest charges, which is deemed to create a level playing field for all competitors, but generates the necessity to benchmark the winning bidder's actual price on the day of financial close. To manage the public sector's uncertainty around the ultimate affordability of the

project, the financiers believe that the government builds in a contingency to the rate it instructs bidders to use.

In summary, risk is passed through the PPP organisational structure from the financiers and the SPV to the contracting companies. Such transfer of risk is needed to obtain an investment grade rating for the project, which reduces the financiers' risk. Some risks are especially problematical to model and some are uncontrollable and therefore may be hedged.

The next section considers some implications that follow from this passing of risk through the private sector structure.

Implications of risk pass through

This section discusses four implications that follow from the financiers' desire to pass risk through the contract, and then discusses the impact on risk transfer between public and private sectors.

Financing a high quality consortium

To make money the financiers must firstly provide finance for the winning bid. Since design and development of projects are perceived to be critical to winning contracts, this appears to explain its high ranking pre-financial close (see Table 5.18 in chapter five):

> *Design and development is what wins a project, so that's a key risk in terms of are you backing the right horse.* (SD2)

Secondly, the financiers must support a consortium capable of delivering the full project. Choosing the wrong consortium is a significant risk especially for senior debt because, although some banks might be able to support competing consortia, the norm at least prior to the credit crunch was that each consortium preferred to work with one bank exclusively.

> *Who are you backing, who is your consortium made up of, who is your contractor, who is your operator, what is their standing,*

> *how robust are they financially, can they withstand a downturn in the economy, are they going to be around for that 25 year contract – nobody can really give you an answer to that but it's your best shot.* (SD1)

Interviewees generally confirm the findings from Table 5.28 that previous experience of consortium members is likely to influence their decision to participate in a consortium. However, an international banking organisation which is publicly owned indicated that it would not be appropriate for it to favour organisations with which it had previous experience over new comers.

In terms of fulfilling the Project Agreement obligations and/or meeting their obligations under the project supports, financiers are particularly concerned about the ability of the construction contractor. While it is widely recognised that risk profiles change over the lifetime of each project and vary across projects, typically they have a curve shape described as follows:

> *Classically the curve looks like a bath, so the risk of failure in the early days is quite high... The risk towards the end is quite high because it's coming towards the end of its life.* (E1)

A major risk for the financiers is that the construction company fails to complete the infrastructure on time. Therefore at the end of construction, risks are generally understood in the market place to reduce significantly. From the perspective of an equity investor (E2), it is useful to have the construction company as a co-shareholder, which ensures that failure to complete on time and to budget is as painful to the constructor as to the equity investor. Of even greater concern is the possibility that the constructor becomes bankrupt during the construction phase, resulting in an incomplete building from which there is no income stream:

> *'If the builder goes bust during construction, it's a disaster'.* (SD3)

The consequence, as a contracting equity investor explained, is a preference for large construction companies that are inherently perceived as less risky and for companies with good quality experience:

> *They do look hard at track record, if you have no track record you are not likely to get onto the short list – you can only start by joining somebody who's got a track record.* (CE3)

Cronyism and a preference for large companies may create barriers to entry, which reduce competition. This may be exacerbated by a propensity to avoid some projects because of the potential for loss of reputation, which might have long term consequences:

> *Reputational risk is important to us, so for example would we do a prison – probably not, because we're concerned about prisoner escapes, prisoners being beaten up and how that reflects on us... some companies are less concerned about it than perhaps we are.* (CE3)

Advice industry

It is clear that an advice industry has grown up around PPP. Virtually all the responding financiers agreed or strongly agreed at Table 5.29 that they are dependent on advice from third party independent advisors for technical, insurance, professional indemnity, financial and especially legal advice.

All parties require legal advice because the nature of PPP is contractual:

> *It's an advisor pest that everyone's got a lawyer, the bank will have its own lawyer because of duty of care to the bank, the builder will have his lawyer, the SPV will have their lawyer, the council will have their lawyer, that's four, and then you'll have sub-contractors and other investors maybe – four is the norm.* (SD4)

Auditors are widely used to check the financial models, which drive decision-making and form the basis for ongoing monitoring. The purpose of this check is to ensure that these models generate financial statements that are accurate and IFRS compliant, and that they are not too aggressive, for example, in relation to tax assumptions.

In particular, the banks are perceived by other players to add to this advice industry:

> *Banks are particularly risk averse... they leave absolutely nothing to chance and because of that negotiations can go on for an indeterminable amount of time.* (CE7)

> *...resulting in much 'to-ing and fro-ing with advisors.* (PS1)

Public sector interviewees indicate that substantial reliance is placed upon their advisors and one interviewee indicates that 'we were totally guided by our legal consultants' (PS5). However, as Table 5.29 shows this is not necessarily true of all private sector organisations, and as a contracting equity investor argues:

> *An advisor is an advisor... but what I don't want an advisor doing is charging off and doing his own thing because he believes that he is negotiating for the team. That's not his job, his job is to negotiate to a point where he can tell me this is what we are doing – is it acceptable? It is my project and you should never have your advisor driving the project.* (CE2)

As Table 5.31 shows, most financiers do not expect that seeking independent advice will transfer risk to them or serve to mitigate their reputation risk in the event of failure. This is confirmed by contracting equity investors, who argue that the financial advisors are very clear that they are advising on a financial model that belongs to the construction company (CE1), and that seeking redress for poor advice is difficult:

> *These days financial advisors' agreements are horrendous, they basically want you to indemnify them for everything that they do if it has an impact on a third party. You then seek to get some indemnity from them and they'll give you probably indemnity for negligence, acts of gross negligence or wilful negligence, wilful default but try and prove gross negligence – you know when it is just a simple mistake it is very, very difficult.* (CE2)

Financiers claim that the due diligence work required by private finance is beneficial:

> *The discipline that is forgotten is that the private sector bring to this the due diligence tradition.* (E2)

Whether such benefits are achieved in practice, and for whose benefit, is beyond the scope of this present work, but interviewees acknowledge that the costs of this advice explain part of the high biddings costs that are generally associated with PPP.

Monitoring of projects

Monitoring is conducted throughout construction and operation phases to ensure that risk is retained by contractors, and not transferred back to financiers. To this end models are continuously updated and a range of cover ratios assessed. As Table 5.32 shows, financiers are very likely to become involved in a project that deviates from the financial model by less than 10%, and many will even become involved below 5%. An equity investor argued that senior debt holders would move quickly to lock up cash to restrict dividend payments in the event that cover ratios fell below their expectations (E5) or if forecasts run through the financial model suggest that the project company could not afford the maintenance costs:

> *If the banks perceive that cost was going to be much higher than currently forecast... they would then say well everything looks*

> *alright to-day but the only way the project company can afford the life cycle is if we stop paying equity now and all that money will sit in the project... the model is run and these ratios are tested before any money is allowed out of the company.* (E6)

Construction is deemed to be especially risky. The Moody's methodology for rating projects examines the willingness as well as the ability of contractors to fulfil financial obligations that arise during the period between the contractual target date of completion and the 'sunset' or 'long-stop' date at which time the public sector procurer will have the right, and may be required to terminate the contract. Since the consequent implications for financiers are likely to be severe if a contractor were to default, their rights to step-in to control projects are perceived as critically important.

Step-in rights

Financiers have a direct agreement with the procuring public authority, which enables the senior debt provider to step-in to take control of any project experiencing difficulties. That is, the step-in rights are intended to allow the lenders to protect their investment and to enable the project to be completed thus assuring the income stream. Many financiers argue that they would wish to step in quickly:

> *The banks need to be able to step in to the situation before the council... we want to be able to fix it before (the procurer) does... (The procurer) will probably compensate us but we don't want to go down that route.* (SD4)

However, chapter two notes the PwC assessment that banks have not stepped-in to projects. This is probably because step-in has a downside in that it signals to the market that the project has problems, so that 'you would only use step-in rights as a last resort' (SD5). Therefore, the possibility of

and circumstances in which contract failure might occur are of significance to the financiers:

> *We obviously don't want... (the procurer) to be able to terminate the contract easily... it would be negotiations around the number of breaches that can occur to the contract... that can cause termination.* (SD4)

In this regard an equity investor argued that there is a clear distinction between the roles of senior debt providers, who he believed do not carry risk in the event of failure, and equity investors, whom he perceived as more active:

> *Senior debt is very passive, capital equity is very active... I think one of the failings of the PPP structure is it doesn't create active management, it doesn't create active capital, it creates static business.* (E2)

Thus throughout the project's lifetime, risks and performance are modelled and may trigger action so that risk does not revert through the SPV to the financiers. Interviewees speak of monthly reporting and regular meetings especially at critical points in the project, but as is often the case with this type of cost in organisations, monitoring costs are not readily quantifiable and vary between projects and over time.

The next section examines the impacts of risk pass through on risk transfer from the public to the private sector.

Risk transfer between the public and private sectors

The rationale behind PPP is that risk should be held by the party best able to manage it, with the expectation that risk will be transferred from the public to the private sector. But as the SPV and financiers, possibly including equity, have limited risk carrying capacity, essentially risk is being diffused amongst multiple private sector organisations. Such organisations

include equity holders, the SPV's contractors, and the contractors' parents, where they provide performance supports, insurance companies, banks, who provide financial supports, and holders of interest rate or inflation swaps etc.

Many of these arrangements add cost to the PPP project which will ultimately be paid by the procurer. This suggests the need for a careful analysis of the nature of the risks to be transferred to the private sector, and the likely impact on the cost to the project of the cost of any risk mitigation put in place by the private sector as well as the cost of the risk premium charged in the unitary payment for risk transfer.

In essence the financiers argue that risks that the private sector is able to manage should be transferred, but that from an economic perspective the public sector should retain risks, even if it cannot manage them, if the private sector is not able to manage that risk. An example given to us relates to the uninsurable risk of vandalism on housing estates with a poor claims history. This risk the financiers argue should be held by the procurer, the housing department of a local authority, even though it cannot control vandalism. Similarly, E1 argues that it does not make economic sense for the government to pass open ended pensions liability risk onto the private sector, because the pricing of any such risk would be unlikely to be good value for the public sector's money. In relation to price inflation on power costs, a contracting equity investor agreed:

> *If you push that risk over to me I can't manage it, I have to price for it and you end up over-pricing it and therefore the government isn't getting value for money... The price tag would be ridiculous, and the government is better hanging on to it.* (CE2)

This economic argument is also recognised at least by some public sector players:

> *If you try and transfer a risk which is inappropriate, you are going to get massive premiums to transfer that risk.* (PS2)

In some cases a risk might be controllable in the wider public sector, although it is not manageable by the specific procuring entity. An example is provided in relation to planning risk on a school's project. Beyond the boundary of the school site, the highways department may require pelican crossings or other road services before planning permission is granted. Such off site risk will probably stay with the procurer not because the education procurer is any better placed to manage such a risk specifically but perhaps because of its perceived association with the wider public sector, and the unit that is making the demand. To some extent this may be a valid perspective, as one public sector interviewee in the education sector argued:

> *We may be able to talk to another public sector organisation and we obviously would have contacts with the minister... we would apply pressure if you like.* (PS5)

In essence, although the private and public sectors are often discussed in relation to PPP as if they were single contracting entities, in practice risk may be held in multiple organisations that may or may not wish to hold that risk. Some risks are not actively managed within the PPP network of organisations; they are mitigated beyond the immediate network elsewhere in the public or private sectors.

The next section examines the final aspect of risk transfer which relates to exit strategies in terms of refinancing and equity sales of PPP projects.

Refinancing and sales

This section shows that the nature of refinancing and equity sales has changed in two ways over the PPP policy's lifetime, and in particular recently because of the credit crunch. Firstly, refinancing has changed from a profitable opportunity to a downside risk. Secondly, primary equity investors now face calls to increase the proportion of equity to debt. This is an unattractive prospect since the secondary market is perceived to be less buoyant.

At the time the questionnaire responses were received, as Table 5.24 shows, the main objectives of refinancing and sales were either to increase the return, by reducing borrowing costs, or to downsize the equity and increase liquidity. Financiers indicate that with experience of PPP, interest rates fell compared to the fixed rates given on the early deals so that refinancing became a profitable option:

> *You refinanced it – basically you could make a big profit, and the equity made a big profit out of it, and the banks were happy to recycle because they were just given their money back.* (CE2)

There is a further incentive to re-finance, as the banking and bonds markets mature, to obtain loans and/or fix rates that originally did not cover the full lifetime of the project:

> *As the PPPs become more mature, become more efficient, the banking market has become more efficient, the capital market has become more efficient, such that you can borrow thirty year money against a thirty year project. In the early deals interest rates could not be fixed for thirty years, they could only be fixed for maybe ten years.* (E5)

Financiers accept that early projects showed significant gains, which they attribute to a cautious approach to pricing in an uncertain environment that they support:

> *In the early days nobody knew what they were doing, it was a new game in town, the banks weren't too sure and we weren't too sure and so the equity returns were set at something like 15%, 17%, you know which were reasonable at the time. When it came to refinancing them five years later, well you could show that performance was good.* (CE2)

Indeed one interviewee argues that the industry should defend itself more robustly:

> *In order to extract value you need to refinance them... Bringing forward cash, bringing forward dividends, and the problem is the Government has been embarrassed... when nobody knew how this sector was going to work, there are probably some unacceptable gains that have been made. But having said that those early deals were pioneering... I'm not really sure why they're not more robust in defending the sector.* (SD5)

As chapter two explains, after the Treasury and industry agreed to share gains, refinancing occurred on fewer deals and brought less benefit to the public sector than expected. Table 5.23 shows that more than half the respondents indicate they have refinanced less than 10% of their projects. The financiers confirm the Treasury's assessment that there are several reasons, including the costs of re-financing deals especially when the gain must be shared with the public sector, and a maturity in the market leading to a fall in the difference between interest rates at financial close and in the operating phase.

However, as re-financing reduced over time the secondary market grew, enabling sales of investments. The NAO (2006) has raised the possibility that sales could be used to avoid sharing refinancing gains. But, although the secondary market is growing, equity investors are also keen to build a reputation for holding their equity interests in PPP projects. For example, one contracting equity investor (CE4) showed interviewers promotional literature advertising that it has never sold its equity interest, and an equity investor (E1) describes his organisation as a long term equity holder, which in normal times chooses not to sell its equity shares in PPP projects. However, when pressed, this interviewee acknowledged that the company was forced to sell eight such projects at, what the interviewee describes as, 'an extraordinary moment in our history' (E1).

Some contracting equity investors offer an alternative perspective. Although their business is construction or facilities management, the PPP

structure essentially encourages, if not requires, equity investment from these contractors, as it is seen as a commitment to the project by the specialist financiers. Contractors with a long term interest in facilities management argued that it is advisable to retain this equity investment since their reputation continues to be at stake in the operational phase. However, construction contractors, whose input typically ceases after the construction phase, may have an incentive to release funds in order to commit to future projects. In the early days of PPP CE2 argued his company expected to sell their equity, but later this changed as they realised they were making a good return. SD5 confirmed this tendency:

> *Everybody is trying to get a share of the primary equity... It's the top of the food chain. The contractors are now realising how valuable this equity is and might sit on it for a while, and then sell it.* (SD5)

The credit crunch changed the refinancing and equity sales market. Firstly, although the perception is not necessarily shared by senior debt lenders, equity and contracting equity investors perceive a lack of willingness on the part of banks to lend for the long term. A typical quote from E5 suggests a willingness by banks to lend for a maximum of ten years: 'The banks are looking to lend typically seven, eight, no more than ten years'.

SD6 argues that banks will still lend long if conditions are favourable but will seek to refinance between seven and ten years into a deal. The impact is that equity investors, and to some extent the public sector, face a refinancing risk. That is, finance will have to be re-negotiated part way through the PPP lifecycle:

> *The public sector is only willing to share a certain element of it... we all hope that in the next seven years the banking markets will come back to some degree of normality, but the risk is that they may not or they may not at the right time. So there is a risk there that we didn't have before... we are taking lots of downside risk on the ability to be able to refinance in the future.* (E5)

Should it prove impossible to refinance, a cash sweep would be required, implying a loss of return for equity investors. A further impact of the credit crunch is that senior debt lenders, who remain in the market, are attempting to increase the proportion of equity finance in PPP, to reduce their risk. Especially for the contracting equity providers, this is problematic as the secondary market is less buoyant, and this is restricting the ability to recycle funds (CE7 and CE2).

SD6 argues that at present the competition between the banks is not as intense, which may have an impact on the pricing of risk, because when competition is intense risk may be mispriced (Keating, 2004). But during the credit crunch era when banks are reluctant to lend, there is more likelihood that risk is overpriced. To the extent that there is over pricing of risk in the market, the expectation would be that if senior lending does become more competitive then there will be future opportunities for beneficial refinancing of projects.

Summary

Risk transfer from the public to the private sector is a key rationale for the use of the PPP method of financing public infrastructure, and the justification for the private sector's higher cost of finance compared to the cost of raising public debt. The Treasury (2003) argues that project risk should be held by the party best able to manage it. But risk allocation is a complex issue. Furthermore, some risks are uncontrollable by either the public or private partners, and some risks are allocated to organisations that cannot actively manage them in-house and therefore mitigate them by various means. This chapter shows that:

- The SPV is thinly capitalised so risk is passed through the PPP network. The 90:10 ratio of debt:equity means that financial risks must be hedged.
- Multiple private sector companies hold elements of the projects' risks.
- Uncertainties, such as insurance costs and long-term lifecycle costs, are difficult to predict and therefore considered risky.

- There is a wide ranging project support system that includes, financial and performance project supports, insurance and hedging mechanisms, project monitoring, and an advice industry.
- Financiers perceive the due diligence work they require brings discipline to procurement processes.
- Project supports are designed to shield the SPV and ultimate lenders from time and budget over runs, but the costs of such measures must raise questions about value for money for the procurer.
- Contractor failure during the construction phase is considered a significant risk, and this perception drives the demand for contract supports, and the importance attributed to negotiations around step-in rights.
- Sectors with high rates of current or potential future change are perceived as especially risky.
- Interest rate hedges enable a stable unitary charge but may make early debt repayment difficult, locking the public sector into the PPP loan arrangements.

Financial models are considered to be commercially confidential. They may be either generic to the investing institution or specifically created for PPP, but are mainly, though not exclusively, quantitative in nature. Model outcomes may lead financers to renegotiate contract terms pre-financial close. Models are not perceived to deal with the possibility of negative interest rates.

The micro-level rationale for using PPP is that it will increase value for money in the procurement of public services and related infrastructure. But this depends upon a competitive bidding process. This chapter shows that:

- The complexity of PPP and the associated bidding costs create caution amongst financiers, who choose their projects and partners carefully.

- Barriers to entry are created, especially for smaller firms and firms without a recognised track record.
- Uncertainty is especially unwelcome and may lead to certain projects, such as refurbishments, being avoided. This potentially reduces the number of bidders or distorts capital investment programmes.

Prior to the credit crunch bonds were attractive to large PPPs because they push costs out to the end of the payment period. However, bondholders are perceived to be remote sources of finance with no direct interest in individual projects. But they demand more information before committing to deals.

During the credit crunch the need to refinance projects part way through their lifetime is perceived as a new risk, where previously refinancing was a profit or liquidity creating opportunity for financiers. At a time when the secondary market is perceived to be less buoyant, restricting the possibilities for recycling of equity cash, equity investors feel under pressure to provide more equity investment to facilitate deals. The banks' demands for more scrutiny and guarantees are increasing the risks of other organisations in the PPP network.

8 Conclusions and Recommendations

Introduction

In the early days of PPP, Gallimore *et al.* (1997) argued that there were significant differences between the perceptions of risks in PPP held by the construction industry and by other stakeholders, especially the financiers. However, since the inception of the PPP policy there has been very little research examining the financiers' perceptions of risks. This report addresses four relevant research questions:

- Research question 1: How do financiers perceive the risks associated with PPP projects?
- Research question 2: How do financiers manage the risks associated with PPP projects?
- Research question 3: How have changes in the industry affected financiers' perceptions of risks?
- Research question 4: How do the financiers' perceptions of risks differ from those of their public sector partners?

This chapter draws together important issues raised in the literature and the empirical findings from the questionnaire survey and the interviews, and relates them to each of these four research questions in turn. Final sections provide some limitations and recommendations for future research, recommendations for policy makers and a summary.

Summary of findings

Research question 1: How do financiers perceive the risks associated with PPP projects?

The literature review distinguishes between risk and uncertainty, where risk involves the possibility of placing a calculable probability on a future event occurring (Broadbent *et al.*, 2008), and where uncertainty occurs if the outcome of a course of action is indeterminate or subject to doubt (HM Treasury, 1997). Respondents perceive that a wide range of factors are important when assessing risks but the importance of risks varies at different stages of the PPP.

The Treasury (2003) argues that risk should be held by the party best able to manage it, but Froud (2003) argues that in PPP there is conflation of risk and uncertainty. The Treasury's position is a simplification that does not deal with risks that are beyond the control of the procurer or the SPV, its owners and subcontractors. Examples include inflation and interest rates and if it is transferred demand risk. If such risks are transferred to the private sector, they will be mitigated by means of, for example, inflation hedges and interest rate swaps or they will attract a high risk premium. In either case the project's cost to the procurer will increase. Financiers are clear that transferring risk to the private sector is uneconomic if the private sector cannot manage it. But this in turn implies that the procurer may need to hold risk that it cannot manage.

The following points summarise the findings about how financiers perceive risk:

- Risk transfer from the public to the private sector is carried out within the framework of standard contracts, even though these may not offer an optimal allocation of risk (Quiggin, 2005).
- Risk transfer to the private sector has increased over the last four years.
- Sectors with high rates of current or potential future change and hard to predict uncertainties are especially risky.

- About one quarter of respondents perceive it is possible to transfer risks back to the public sector after the project is negotiated or that risk transfer may not be agreed until after the contract is awarded.
- In terms of overall ranking, design and development was ranked as the highest risk in the pre-financial close and construction phases of PPPs. Finance risk was ranked as the second highest risk in both these phases and in the operations phase.
- A significant risk is perceived to be contractor failure during the construction phase. Perceptions about this risk in particular drive the demand for contract supports, and the importance attributed to negotiations around step-in rights.
- After construction, one quarter of respondents perceive that PPP is very low risk.

The financiers' perceptions reported here contradict previous findings that risk allocation between PPP partners may be unclear, and that the way in which risk profiles change over project lifetimes is not well understood (Ng and Loosemoore, 2007).

Research question 2: How do financiers manage the risks associated with PPP projects?

Risks are managed in a number of different ways, which may be summarised as follows:

- Risks may be avoided by selecting familiar contracts and partners and refusing projects with uncertainties, such as refurbishments, or with high reputational implications, such as prisons.
- Risks are passed through the PPP organisational structure to subcontractors.

- Financial and performance contract supports ensure risk does not revert to financiers.
- Direct agreements and step-in rights empower senior debt holders.
- Purchase of insurance cover and hedges.
- Modelling to achieve investment grade rating.
- Third party advice.
- Project monitoring.

This combination of methods results in multiple entities holding elements of PPP risk.

Singh and Kalidindi (2006) argue that the private sector may be reluctant to carry certain risks. Interviewees indicate that they choose the contracts for which they bid, and the members of the consortium, carefully. Thus risks associated with unfamiliar projects or partners are avoided, but barriers to market entry may be created. Risks linked to user choice may also be avoided, as is demand risk in four of the five sectors examined here.

PPPs normally adopt a heavily geared financial structure to minimise the return required by equity, with the consequence that the thinly capitalised SPV has limited risk carrying capability. The high levels of gearing represent a risk to senior debt, and have two implications for risk management. Firstly, risks are passed through the PPP organisational structure to the subcontractors. In order to ensure that risks do not revert to financiers, they require financial and performance supports to be provided by the subcontractors, ultimately increasing the unitary charge. Interest rate hedges may lock procurers into long term loans.

Secondly, the legal structure of the PPP involves a direct agreement between the senior debt holders and the procurer, empowering senior debt holders to step-in to the contract in the event of poor contractor performance or contractor failure. The existence of this agreement may introduce delay and cost, or limit flexibility, if contract amendments are required.

The empirics in this study based on five sectors expand Akintoye and Chinyio's (2005) findings in healthcare that transferring risk to subcontractors and buying insurance cover are the most prominent strategies for managing and mitigating risks.

Risk modelling to identify, assess and price risks is perceived as a major and important exercise, even if there is some doubt about its validity. Models are perceived to be commercially confidential, but the outline of the Moody's rating model is in the public domain by registering on the website. This model is substantially quantitative in nature, although qualitative factors may cause apparently small adjustments to the outcome of the model to achieve an overall rating. It is likely that the financiers' models have similar characteristics. This provides indirect confirmation of the pervading power of accounting logic with its emphasis on quantification (Broadbent *et al.*, 2008). PPP deals are usually structured so that the project obtains an investment grading. If a model outcome signals higher risk, re-negotiation and/or sharing of risks with the public sector will be pursued.

Financiers, and indeed procurers, seek independent third party advice from legal, technical, insurance and sometimes financial and professional indemnity specialists. Most respondents agree they are dependent on such advice, especially legal advice, although most do not believe that seeking advice transfers risk to the advisors.

Continuous monitoring of performance against the financial models is conducted, either in-house or by third party advisors. Deviations from the model of less than 5% and between 5% and 10% will trigger intervention by about 40% and 45% of financiers respectively. Ultimately financiers state they will exercise step-in rights, even though such a move signals to the market that a project is in distress. However, PwC (2008) find that step-in is infrequent.

Research question 3: How have changes in the PPP industry affected financiers' perceptions of risks?

Before the credit crunch, changes were essentially associated with a maturing industry. Early memories provided by interviewees suggest high levels of uncertainty about the risks and the risk-return relationship inherent

in PPP at the outset. As the industry matured, debt products became commodified. Importantly from the financiers' perspective, a secondary market developed enabling exit from investments. Early exit is intended by about 20% of respondents and only two thirds report their intention to stay with a PPP till contract end.

Opportunities for profitable refinancing became available as PPPs in the operations phase were able to show good performance. Although the majority of survey respondents believe they have not overestimated risks historically, opportunities for profitable refinancing do appear to have reduced, which might suggest the opposite. Alternatively, equity sales may have replaced refinancing (NAO, 2006). Amongst the questionnaire respondents 28% had sold more than 50% of their projects in the last five years as opposed to 11% who had refinanced, which provides some limited support for the NAO's suggestion.

The private equity and facilities management companies perceive a reputation benefit from making a long term commitment to a PPP project, whereas the construction companies tended, at least initially, to have a shorter term investment horizon. Contracting equity investors have potential streams of profit from both the contracting work and the investment, but when appraising projects the main driver for deciding to bid is gaining the construction work rather than the financial return on the equity investment. However, there is some evidence that return from the investment in PPP is also becoming attractive to construction companies over the longer term.

During the credit crunch, the following changes in the industry are essentially imposed by a lack of capacity in the senior debt and bond markets:

- Although it is to some extent disputed by the bankers, equity investors perceive that not only is there much less senior debt funding available, but also that banks are less willing to provide finance for the full lifetime of the PPP project.

- Perceptions about refinancing have changed. Where previously it was an attractive opportunity, it is perceived as a downside risk for deals written during the credit crunch that may need to be refinanced between

seven and ten years into the project. This is essentially a risk for equity investors, but could have implications for the public sector and service users if refinancing proves impossible or very expensive.

- The banks' margin has increased and there is pressure to increase the proportion of equity to debt. Perceptions about the required level of equity vary from 15% to 30%, compared to the previous level of about 10%. The required rate of return by equity investors is perceived to be rising. To the extent that these perceptions are accurate, it is possible that if international capital markets stabilise, there will be renewed interest in refinancing as the market regains competitive pressure.
- Whereas the senior debt market is perceived to be in crisis, this is not the case with the primary equity market. However, the secondary equity market is perceived to be less buoyant than before the credit crunch took effect.

Research question 4: How do the financiers' perceptions of risks differ from those of their public sector partners?

Williams *et al.* (2003) and Abednego and Ogunlana (2006) argue that risks affect behaviour when their consequences are personally relevant and when they materialise. The findings of this study confirm those tendencies. Private sector respondents are focused on risks that they are contractually allocated and need to transfer, whereas public sector interviewees are focused on the risks they retain. In summary:

- In four of the five sectors – the exception is roads – the public sector interviewees are concerned about the financial consequences of holding demand risk, which can result in making unitary payments for unwanted facilities.
- The nature of political risks associated with PPP projects varies across the sectors but the procurers' concern focuses on the impacts on service users.

- User specificity of infrastructure is a risk factor for financiers (Rodney and Gallimore, 2002), but potential building obsolescence most concerns the procurers.
- Conflicting needs, to reduce cost drivers on the part of financiers and to increase flexibility in building use to meet changing operational requirements on the part of the procurers, create trade-offs between flexibility in and affordability of contracts.
- Procurer driven changes to contract specifications during negotiations are perceived as undesirable and disproportionately costly by the financiers. Especially the need to obtain agreement from senior debt holders causes delay and adds costs.
- Whereas the financiers and designers appear content to insure against claims arising from incidents such as accidents, there is some evidence that contracting equity investors and the public sector are more concerned that incidents should be avoided because of the impact on service users and employees.
- Literature suggests the public sector may be less adept at negotiating and managing risks. While virtually all respondents agree that they are reliant on third party advice, there is some evidence that greater reliance is placed on such advice in the public sector.

Limitations and recommendations for future research

This study examines the perceptions of risks in PPPs held by financiers, who are key players in the industry. The perceptions reported are as given to the researchers by way of a questionnaire survey and at interview, and the findings and inferences drawn from them are thus subject to the well-recognised limitations of these research techniques. In the light of such limitations, six areas for future research are identified:

- A number of interviewees signalled that in their opinion there were more opportunities for bonds and pension funds to invest in PPP than

the levels of such investments to date. However, a counter argument was made that this may not be the best solution for taxpayers. Research questions might focus on issues such as: (i) the suitability and cost of index linked bonding and pension fund investments for financing public infrastructure assets; (ii) whether there are barriers to such investments and if so whether these can, or should, be reduced or removed; and (iii) the impact of remote investors on other network players and the public authority, especially in terms of the demands made for documentation during the negotiation and monitoring processes, and the operations phase of the projects.

- The significant cost associated with using third party advice in PPPs has always been controversial, and the fixed element of much of the costs is one factor that renders PPPs unsuitable for small projects. However, this research also identifies that considerable reliance is placed on such advice in both sectors, but especially in the public sector, where unbiased and independent advice is needed to protect the public interest (Bloomfield, 2006). However across a range of projects, advisors may act for both the public authority and one or more members of the private sector PPP network, raising questions about whether such advice is, or can be, unbiased and independent in practice. Therefore future research might explore the roles, incentives and any potential conflicts of interest of third party advisors in PPP project negotiation and monitoring processes.
- The perceptions of industry insiders that risk allocation is clear and risk profiling well understood do not necessarily negate Ng and Loosemore's (2007) contrary arguments that: (i) risk allocation is difficult because of the technical, legal, political and economic complexity of PPP; and, (ii) the way risk profiles change over the duration of projects is not well known. Industry insiders could present an over confident assessment of their own abilities. Risk transfer is at the heart of PPP and risk pricing is often critical to the VFM case for using PPP to finance a project. The finding here that some one quarter of respondents perceive it is possible to transfer risk back to the public sector after financial close or that risk transfer may not be agreed until after the contract is awarded, raises questions about the accuracy and reliability of risk pricing in bids. Therefore, research comparing assumptions made in business cases about

risk transfer and the costs of holding risks with actual outturns would be useful to policy makers, procurers and service providers, if the necessary documents could be made available. In addition, longitudinal research that focused on how risk profiles change over time on different projects would be useful, as would evidence about whether or not interest rate hedging locks the public sector into unfavourable loan arrangements.

- This research has explored public sector perceptions of risks through a small number of interviews only. Previous research, albeit of limited volume, has examined perceptions of risks and risk management in the public sector, but this study indicates a further area where research would be valuable. The study shows that risks affect behaviour in PPP when their consequences are personally relevant and when they materialise. So that demand risk and the future flexibility of infrastructure to meet demand are significant risks for the public sector, about which there is little research. Research on the costs and benefits associated with the trade-offs between affordability and flexibility would be valuable.

- The management of demand risk has received little attention in the literature because it is normally retained, except in roads, by the public sector. This research shows that demand management is becoming an issue of concern for public authorities faced with the prospect of insufficient demand to cover the PPP unitary charge. This research also shows some evidence of sector level planning to address demand management problems by channelling demand into PPP facilities, but it is an issue for further research as to how such planning can be implemented especially in politically sensitive areas such as education, hospitals and housing.

- While it is largely outside the remit of this project, interviewees have flagged the differing attitudes of PPP partners to the impacts of risk on service users and to the mitigation of such risks. Whether and if so how, PPP changes the management of risk impact on service users is a final area for future research.

Recommendations for policy makers

- *A macro-level review of the PPP policy*. While they deny over pricing the risks of early projects, PPP financiers discussed a maturing industry in which commodification of finance products had taken place as they began to understand the risk-return inherent in PPP projects. That is, there is an understanding amongst the financiers that PPP has gone through an early stage of learning in which some lessons have been learned. At a macro level our recommendation is now that an extensive review of the PPP policy should be conducted to compliment the reviews of individual projects that have been undertaken by the NAO in particular. Where the reviews of projects have led to changes in procedures, for example the re-writing of the standard contract, a review of the policy might similarly lead to the resolution of a number of issues we outline in further recommendations below and to new guidance.

- *A systemic review of the accuracy of risk pricing and of risk transfer*. The finding of this research is that some one quarter of respondents perceives it is possible to transfer risk back to the public sector after financial close or that risk transfer may not be agreed until after the contract is awarded. While a minority of respondents, 25% is a large minority especially given that the respondents, who are financiers, might be expected to be reluctant to admit this for two reasons. Firstly, such an admission might reflect adversely on the value to the public sector of the PPP deals, and secondly, their focus is likely to be on risks that they have assumed rather than those that rest elsewhere. Such a finding is a matter of concern given that the low capitalisation of the SPVs inevitably means that failed projects can leave the public sector without recourse but with an ongoing obligation to provide services. Thus there is a need to assess systemically across a large number of projects the reliability of risk pricing in PPP contracts and the practice of risk transfer compared to the assumptions in the 'Business Case'.

- *A macro-level review of the need for and procurement of risk mitigation measures*. This study shows that multiple private sector companies put in place for each individual PPP project risk mitigation measures to

reduce or remove their exposure to risks such as inflation, and interest rate rises. Such measures ultimately add cost to the public authority and the tax payer. Policy makers should consider at a macro level whether government actually does need to pay to mitigate risks of this nature, or whether the public sector should hold such risks. Furthermore, if it is determined that such risk mitigation is required by government then policy makers should consider how best to purchase it. Can economies of scale be achieved by government directly acquiring such risk mitigation across a range of PPP projects rather than paying for each individual project through the middlemen of multiple private sector contractors?

- *The reduction of bidding costs to encourage new entrants*. Public and private sector partners need to consider how high bidding costs can be reduced to encourage new entrants to the PPP market and more bidders for individual projects. This research shows that high bidding costs lead bidders to select carefully the projects they will bid for and to work with known and trusted partners. This potentially reduces the competition for individual projects and creates barriers to entry to the PPP marketplace.

- *A review by procurers of their policies on the use of third party advice and its value for money*. This research shows that just over half of the financiers believe that the costs of monitoring projects by third party agents is increasing and that considerable reliance is placed upon third party advice, especially in the public sector. The size of consultancy fees has been an area of controversy and with public sector budgets set to be cut a review of such costs would be timely.

- *Greater transparency of contract details to enable scrutiny of PPP both at policy and individual project level*. More contract details should be released into the public domain to enable independent assessment of risk pricing and its VFM, and to compare expected versus actual risk transfer. The findings of this study lead us to repeat the many calls already made for greater transparency, and in particular to repeat the Shaoul *et al.* (2008) argument that all public authorities should routinely publish their business cases after financial close, and that there should be an agreed time period after financial close beyond which commercial confidentiality should not be used as a rationale for non-disclosure.

Summary

A complex network of organisations surrounds the two main partners to a PPP contract – the procurer and the SPV. Within this network, risk passes from the SPV which is the signatory to the legal contract with the procurer. Much of this risk is transferred by means of additional legal contracts, to subcontractors who are responsible for construction and operations. However, within the network risks may be allocated to parties who cannot control them or do not wish to hold them, in which case they will be mitigated by various means, including hedges and swaps and frequently insurance. Such risks are thus dispersed around the private sector, beyond the immediate PPP network.

Senior debt holders have a powerful position within this network. The outcome of the modelling processes essentially needs to create an investment grade rating for the project, so that it can be financed. Contracts and risk allocations may be re-designed or re-negotiated to achieve this outcome. Subcontractors must provide financial and performance supports, essentially to protect the interests of the financiers against poor subcontractor performance or contractor failure. Crucially debt servicing costs are covered by these supports during any time over-runs on the target completion dates for a project. This is especially important as debt servicing supports improve the project's credit rating. The credit rating assessments will cover both the contractor's ability and willingness to pay in the event of problems.

Risk and risk transfer are central elements of PPP. By focusing on the financiers' perceptions of risks and risk management, the report shows that risk is widely dispersed in the private sector by contractual means. Given the size and longevity of these PPP contracts, there has been an inevitable rise of a PPP advice industry.

This research report contributes to an understanding of how PPP operates in practice. It shows that while the private sector is often described in relation to PPP as if it were a single entity, in practice risks transferred from the public sector are dispersed amongst multiple organisations both within an immediate PPP network and beyond. This dispersion of risks adds cost to the unitary charge raising questions about whether VFM is achieved for the procurer, and ultimately the taxpayer.

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APPENDIX 1

General types of risk in PPP projects

Risk	Description
Availability risk	The risk that the quantum of the service provided is less than that required under a contract.
Business risk	The risk that an organisation cannot meet its business imperatives.
Construction risk	The risk that the construction of physical assets is not completed on time, to budget and to specification.
Decant risk	The risk arising in accommodation projects relating to the need to decant staff/ clients from one site to another.
Demand risk	The risk that demand for a service does not match the levels planned, projected or assumed. As the demand for a service may be partially controllable by the public body concerned, the risk to the public sector may be less than that perceived by the private sector.
Design risk	The risk that design cannot deliver the services at the required performance or quality standards.
Economic risk	Where the project outcomes are sensitive to economic influences. For example, where actual inflation differs from assumed inflation rates.
Environment risk	Where the nature of the project has a major impact on its adjacent area and there is a strong likelihood of objection from the general public.
Funding risk	Where project delays or changes in scope occur as a result of the availability of funding.
Legislative risk	The risk that changes in legislation increase costs. This can be sub-divided into general risks such as changes in corporate tax rates and specific ones which may affect a particular project.

General types of risk in PPP projects (Cont.)

Risk	Description
Maintenance risk	The risk that the costs of keeping the assets in good condition vary from budget.
Occupancy risk	The risk that a property will remain untenanted – a form of demand risk.
Operational risk	The risk that operating costs vary from budget, that performance standards slip or that service cannot be provided.
Planning risk	The risk that the implementation of a project fails to adhere to the terms of planning permission or that detailed planning cannot be obtained, or if obtained, can only be implemented at costs greater than in the original budget.
Policy risk	The risk of changes of policy direction not involving legislation.
Procurement risk	Where a contractor is engaged, risk can arise from the contract between the two parties, the capabilities of the contractor, and when a dispute occurs.
Project intelligence risk	Where the quality of initial project intelligence (e.g. preliminary site investigation) is likely to impact on the likelihood of unforeseen problems occurring.
Reputational Risk.	The risk that there, will be an undermining of customer/ media perception of the organisations ability to fulfill its business requirements e.g. adverse publicity concerning an operational problem.
Residual Value risk	The risk relating to the uncertainty of the value of physical assets at the end of the contract.
Technology risk	The risk that changes in technology result in services being provided using non-optimal technology.
Volume risk	The risk that actual usage of the service varies from the level forecast.

Source: HM Treasury, 2003, The Greenbook: Appraisal and evaluation in central government, pp. 82-83, HMSO: London.

APPENDIX 2

Hierarchy of nvivo codes for interview analysis

We coded the interview information initially by whether the content related to the PPP industry or to projects. Within these two broad categories layers of data coding were developed as set out below.

Industry level codes

Level 1 Industry	Information of a generic nature about the PPP industry, such as the size/structure and governance of PPP.

Below this first level data was collected around three categories: the public and private sector players and sectoral information.

Level 2 Public sector	Information of a generic nature about the public sector players, including information about their roles/networks/governance relationships.

This level was also sub-divided into the three areas of the UK in which our cases were located.

Level 3 Eng	Information specifically about PPPs in England
Level 3 Scot	Information specifically about PPPs in Scotland
Level 3 NI	Information specifically about PPPs in N. Ireland

Level 2 Private sector players	General information about the size of the market/the major players.

This level was further sub-divided to separate information collected about three significant players and general operations and management issues.

Level 3 F	Financiers
Level 3 A	Agents
Level 3 C	Construction
Level 3 O	Operation/management

Level 2 Sectorial information Information about contrasts between sectors.

This level was then sub-divided to capture data about the specific sectors in which our case studies were located.

Level 3 H	Housing
Level 3 E	Education
Level 3 Hos	Hospitals
Level 3 R	Roads
Level 3 P	Prisons

Project level codes

Level 1 Projects	Information of a generic nature about PPP projects.

Below this first level data was collected around three categories: project risk, financiers and other players.

Level 2 Project risk	Generic information about project risk.

This level was sub-divided into types of risk and issues around risk transfer between players.

Level 3 Risk	Information about the types of risk in PPPs, which was sub-divided into:
Level 4	General risks common to all sectors
Level 4	Sector specific risk
Level 3 Risk transfer	Information about risk transfer, including issues about contractual risk allocation between partners and perceptions about risk holding after financial close.
Level 2 Financiers	Generic information about financiers' perceptions of risk. Information was sub-divided and coded by the type of financier.
Level 3 B	Bond financiers
Level 3 SD	Senior debt financiers
Level 3 E	Equity financiers and providers of sub-debt

Under each of these categories the financiers' perceptions of risk were coded into six areas, with the last two further sub-divided to capture issues about which many financiers spoke at some length.

Level 4 P	Perceptions of risk
Level 4 F	Choice of finance
Level 4 RA	Risk assessment

Level 4 R	Refinancing and sales
Level 4 H	Hedging
Level 5 IS	Interest Swaps
Level 5 I	Inflation
Level 4 M	Management risk
Level 5 INS	Insurance
Level 5 PA	Professional advice
Level 2 Other players	Information about players' (other than financiers) perceptions of risk, and then coded by type.
Level 3 O	Private sector operators
Level 3 U	Public sector procurers at unit level
Level 3 H	Public sector players in hierarchy above unit

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ABOUT SATER

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SATER's objective is to promote research into, and education of, accountancy, finance and management together with all subjects in any way related. In fulfilling its charitable objectives, it also seeks to provide public benefit by making grants for research projects which result in reliable evidence for use in the development of policy – by professional bodies, standard setters, regulators or Governments.

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Further details about SATER and the ICAS research programme can be found from the SATER and ICAS websites: scottishaccountancytrust.org.uk/research.html and icas.org.uk/research.

Nigel Macdonald
Chairman of SATER

September 2010

Public private partnerships (PPP) are used extensively in the provision of public services. Who actually bears the risk in such schemes? This new research report looks at PPP schemes from a new and different viewpoint by examining financiers' perceptions of risks and then comparing them to the perceptions of their public sector partners.

The report explains the complex network used in PPP schemes and investigates how financiers perceive the risks associated with PPP; how financiers manage these risks; how changes in the PPP industry, including the impact of the credit crunch, have affected financiers' perceptions of risks; and how financiers' perceptions of risks differ from those of their public sector partners.

A clear understanding of how risks are dispersed and managed is essential to inform future policy development, especially at a time when the intention of the new government and the impact of public spending cuts on PPP is uncertain. The intention with PPP is that risks should be held by the party best able to manage them, and that the transfer of risk is priced into any PPP contract, yet one of the key findings of this research is that it is possible to transfer risk back to the public sector after contracts have been settled. The impact of this on value for money to the public sector and ultimately taxpayers needs to be assessed.

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